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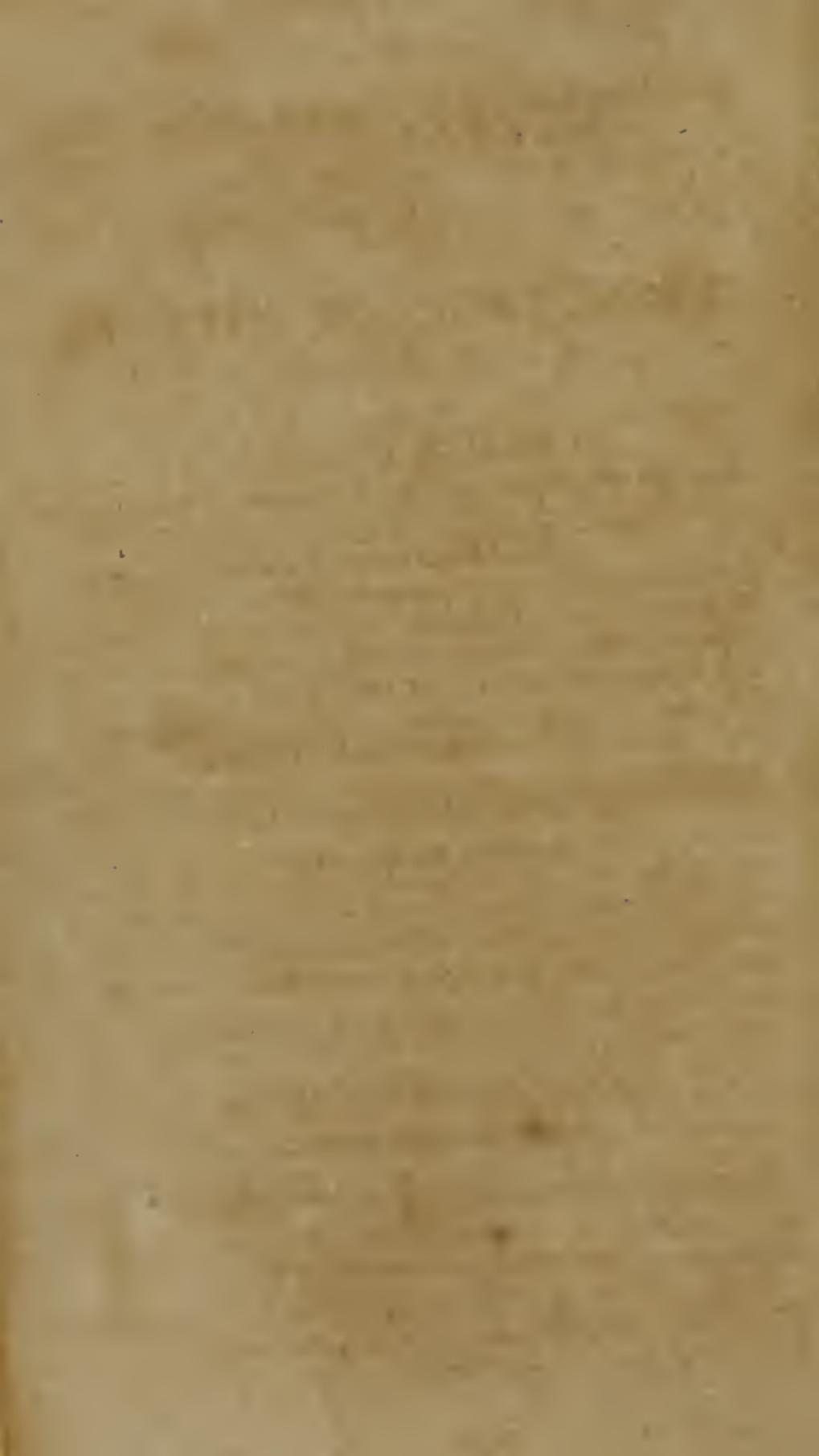
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FIRST LINES
OF THE
PRACTICE OF PHYSIC.

—
BY WILLIAM CULLEN, M. D.

Late Professor of the Practice of Physic in the University of Edinburgh; First Physician to his Majesty for Scotland; Fellow of the Royal College of Physicians of Edinburgh, of the Royal Societies of London, of Edinburgh, &c. &c. &c.

—
WITH

SUPPLEMENTARY NOTES,

INCLUDING THE MORE RECENT IMPROVEMENTS IN THE
PRACTICE OF MEDICINE.

—
BY PETER REID.

—
A NEW AND IMPROVED EDITION.
TWO VOLUMES IN ONE.

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P R E F A C E

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THE EDITOR.

U 15 MAY '48

THE almost unrivalled celebrity of Dr. CULLEN, and the high estimation which his Practice of Medicine has universally acquired, render it quite unnecessary to expatiate on his merits. His practical remarks are almost converted into medical axioms ; and even error itself was, for a time, respected under the venerable sanction of his name. To him we are indebted for first arranging the scattered and insulated subjects of practical medicine, into a system at once luminous, profound, simple and connected, and which every where exhibits the stamp of a vigorous generalising mind ; where an uncommon talent for observation, united with the most ample experience, give such an authority to his conclusions, that, in what regards the treatment of diseases, to depart from the opinion of CULLEN, is considered such a schism from the established creed of medical men, as can only be justified by the most decisive evidence.

If Dr. CULLEN has failed any where, it is where no man has yet been successful, in his attempts to theorise ; attempts which it seems to be the fate of almost every medical man of genius to make, and in which the frequent failure has afforded more than an honest triumph to those who never fall, because they never venture to rise, and who are not unfrequently deterred, rather by the imbecillity than the comprehension of their minds, from following a like course. Indeed, there seems something so irresistibly fascinating in prescribing from a plausible theory, in being able to point

out the nature of proximate causes, and grasp a system by one daring effort of intellect, that we have as little reason to wonder at the many strange theories that have been broached, as at the tenacity with which the most absurd of them has been maintained ; nor is it easy to determine, whether he who follows the blind routine of empiricism, or he whose practice is shaken by the crude conceptions of every school boy theorist, is more to be pitied. There is, however, a middle way between the creeping round of mere matter of fact men, and the airy fancies of those who soar infinitely beyond the regions of sober sense and sound judgment. "The one should remember, that without mechanical performances, refined speculation is an empty dream ; and the other, that without theoretical reasoning, dexterity is little more than a brute instinct."*

In the following notes, I have endeavored to give a clear view of the more important discoveries which have been made in the practice of medicine since the time that Dr. CULLEN wrote ; and I hope that I have been enabled to supply all the more recent and useful information on this subject, which indeed is by no means so extensive as might have been expected, from the rapid progress which the sciences most intimately connected with medicine have made of late years.

Since Dr. CULLEN'S work appeared, new systems have been advanced by men distinguished by their genius and learning, which, in many points, have enlarged our knowledge of the animal economy ; but, to enter into these speculations, is perfectly foreign to the object of the following Notes, which are intended to be principally of a practical nature.

The definitions of diseases taken from Dr. CULLEN'S Nosology, must be useful to the Student who wishes to retain in his mind the more prominent and characteristic symptoms of each disease.

The Formulae are intended to accomodate the more general directions to practice, and to prevent that embarrassment which is often so troublesome to those who have not been much habituated to prescription.

* Rambler.

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* Though I have thought it proper to divide this book into sections, I think it necessary, for the convenience of references, to number the chapters from the beginning.—Author.

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P R E F A C E

TO THE LAST EDITION

BEFORE THE AUTHOR'S DEATH.

To deliver a System of the Doctrines and Rules proper for directing the Practice of Physic, is an undertaking that appears to me to be attended with great difficulty ; and, after an experience of more than forty years in that practice, as well as after much reading and reflection, it was with great diffidence that I ever entered upon such a work. It was, however, what seemed to be my duty as a Professor that induced me to make the attempt, and I was engaged in it by the same sentiments that the illustrious Dr. BOERHAAVE has expressed in the following passage of the Preface to his Institutions : “ *Simul enim docendo admotus est ram s. nisi, proprietatum cogitatorum explicacione decentem plus proficere, quam si opus ab alio conscriptum interpretari suscipit. Sua quippe optime intelligit, sua cuique praeceteris placent, unde clarior fide doctrina, atque animata plerumque sequitur oratio. Qui vero sensu alterius exponit, infelicius sapientia eadem assequitur; quunque suo quisque sensu abundant, multa refutanda frequentur inventit, unde gravem frustra laborem aggravat, minusque incitata dictione utitur.* ” It is well known that a Text book is not only extremely useful but necessary to Students who are to hear Lectures ; and from the same considerations that moved Dr. Boerhaave, I also wished to have one for myself ; while at the same time, from some peculiar circumstances in my situation, I had some additional inducements to undertake such a work.

Before I was established as a professor of the Practice of Physic in this University, I had been employed in giving Clinical Lectures in the Royal Infirmary, and upon that occasion had delivered what, in my own opinion, seemed most just with regard to both the nature and the cure of the diseases of which I had occasion to treat ; but I soon found that my doctrines were taken notice of as new and peculiar to myself, and were accordingly severely criticised by those who, having long before been trained up in the system of Boerhaave, had continued to think that that system neither required any change, nor admitted of any amendment. I found at the same time, that my doctrines were frequently criticised by persons who either had not been informed of them correctly, or who seemed not to understand them fully ; and therefore as soon as I was employed to teach a more complete System of the Practice of Physic, I judged it necessary to publish a Text book, not only for the benefit of my hearers, but that I might also have an opportunity of obtaining the opinion of the Public more at large, and thereby be enabled either to vindicate my doctrines, or be taught to correct them. These were the motives for my attempting the Volumes I formerly published ; and now, from many years experience of their utility to my hearers, as well as from the favorable reception they have met with from the Public, I am induced to give a new edition of this Work, not only, as I hope, more cor-

rect in many parts, but also more complete and comprehensive in its general extent.

At the first publication of this Work, it was intended chiefly for the use of those Gentlemen who attended my Lectures, although even then, for the reasons I have mentioned, it was rendered more full than Text books commonly are; and in the repeated editions I have since had occasion to give, I have been constantly endeavoring to render it more full and comprehensive. In these respects, I hope the present edition will appear to be rendered more fit for general use, and better calculated to afford satisfaction to all those who think they may still receive any instruction from reading on this subject.

While I thus deliver my Work in its now more improved state, with the hopes that it may be of use to others as well as to those who hear my Lectures, I must at the same time observe, that it presents a system which is in many respects new, and therefore I apprehend it to be not only proper, but necessary, that I should explain here, upon what grounds and from what considerations this has been attempted.

In the first place, I apprehend that in every branch of science with respect to which new facts are daily acquired, and these consequently giving occasion to new reflections, which correct the principles formerly adopted, it is necessary from time to time to reform and renew the whole system, with all the additions and amendments which it has received and is then capable of. That at present this is requisite with regard to the Science of Medicine, will I believe readily occur to every person who at all thinks for himself, and is acquainted with the Systems which have hitherto prevailed. While therefore I attempt this, I think it may be allowable, and upon this occasion even proper, that I should offer some remarks on the principal Systems of Medicine which have late prevailed in Europe, and that I should take notice of the present state of Physic as it is influenced by these. Such remarks I hope may be of some use to those who attempt to improve their knowledge by the reading of books.

Whether the Practice of Physic should admit of reasoning, or be entirely rested upon experience, has long been and may still be a matter of dispute. I shall not however at present enter upon the discussion of this, because I can venture to assert, that at almost all times the practice has been, and still is with every person, founded more or less upon certain principles established by reasoning; and therefore, in attempting to offer some view of the present state of Physic, I must give an account of those systems of the principles of the science which have lately prevailed, or may be supposed still to prevail in Europe.

When, after many ages of darkness, which had destroyed almost the whole of ancient literature, learning was again restored in the fifteenth century; so, from causes which are well known, it was the system of Galen alone that the Physicians of those days became acquainted with; and during the course of the sixteenth century, the study of Physicians was almost solely employed in explaining and confirming that system. Early indeed in the sixteenth century, the noted Paracelsus had laid the foundation of a Chemical System, which was in direct opposition to that of Galen, and by the efficacy of the medicines employed by Paracelsus and his followers, their system came to be received by many; but the systematic Physicians continued to be chiefly Galenists, and kept possession of the Schools till the middle of the seventeenth century. It is not however necessary here to enter into any further detail respecting the fate of those two opposite sects, for the only circumstance concerning them, which I would wish at present to point out, is, that, in the writings of both, the explanations they severally attempted to give of the phenomena of health or sickness turned very entirely upon the state of the fluids of the body.

Such was the state of the science of Physic till about the middle of the seventeenth century, when the circulation of the blood came to be general-

ly known and admitted, and when this, together with the discovery of the receptacle of the chyle and of the thoracic duct, finally exploded the Galenico-system. About the same period, a considerable revolution had taken place in the system of Natural Philosophy. In the course of the seventeenth century, Galileo had introduced mathematical reasoning, and Lord Bacon having proposed the method of induction, had thereby excited a disposition to observe facts, and to make experiments. These new modes of philosophising, it might be supposed, would soon have had some influence on the state of medicine, but the progress of this was slow. The knowledge of the Circulation did indeed necessarily lead to the consideration, as well as to a clearer view of the Organic System in animal bodies, which again led to the application of the mechanical philosophy towards explaining the phenomena of the animal economy; and it was applied accordingly, and continued, till very lately, to be the fashionable mode of reasoning on the subject. Such reasoning indeed must still in several respects continue to be applied; but it would be easy to show, that it neither could nor ever can be applied to any great extent in explaining the animal economy, and we must therefore look for other circumstances which had a greater share in modelling the System of Physic.

With this view it may be remarked, that till the period just now mentioned, every physician, whether Galenist or Chemist, had been so much accustomed to consider the state and condition of the fluids both as the cause of disease and as the foundation for explaining the operation of medicines, that what we may term an HUMORAL PATHOLOGY still continued to make a great part of every system. In these circumstances, it was soon perceived that chemistry promised a much better explanation than the Galenic or Aristotelian philosophy had done; and therefore, while the latter was entirely laid aside, a chemical reasoning was every where received. Lord Bacon, with his usual sagacity, had early observed that chemistry promised a great number of facts, and he thereby gave it credit; whilst the Corpuscularian philosophy, restored by Gassendi, readily united with the reasonings of the Chemists; and the philosophy of Des Cartes readily united with both. From all these circumstances, an Humoral, and chiefly a Chemical Pathology, came to prevail very much till the end of the last century, and has indeed continued to have a great share in our systems down to the present time.

It is proper now, however, to observe, that about the beginning of the present century, when every part of science came to be on a more improved and correct footing, there appeared in the writings of Stahl, of Hoffman, and of Boerhaave, three new, and considerably different Systems of Physic, which have ever since had a great share in directing the practice of it. In order, therefore, to give a nearer view of the present state of Physic, I shall offer some remarks upon these different systems; endeavoring to point out the advantages as well as the disadvantages of each, and how far they still prevail, or, according to my judgment, deserve to do so.

I shall begin with considering that of Dr. Stahl, which I think appeared first, and for a long time after was the prevailing system in Germany.

The chief and leading principle of this system is, that the rational soul of man governs the whole economy of his body. At all times Physicians have observed, that the animal economy has in itself a power or condition, by which, in many instances, it resists the injuries which threaten it, and by which it also, on many occasions, corrects or removes the disorders induced, or arising in it. This power Physicians very anciently attributed, under a vague idea, to an agent in the system, which they called NATURE; and the language of *a vis conservatrix et medicatrix naturæ*, has continued in the schools of medicine from the most ancient times to the present.

Dr. Stahl has explicitly founded his system on the supposition, that the power of nature, so much talked of, is entirely in the rational soul. He

sapposes, that upon many occasions the soul acts independently of the state of the body, and that without any physical necessity arising from that state, the soul, purely in consequence of its intelligence, perceiving the, tendency of noxious powers threatening, or of disorders any ways arising in the system, immediately excites such motions in the body as are suited to obviate the hurtful or pernicious consequences which might otherwise take place. Many of my readers may think it was hardly necessary for me to take notice of a system founded upon so fanciful a hypothesis ; but there is often so much seeming appearance of intelligence and design in the operations of the animal economy, that many eminent persons, as Perrault in France, Nichols and Mead in England, Porterfield and Simson in Scotland, and Gaubius in Holland, have very much countenanced the same opinion, and it is therefore certainly entitled to some regard. It is not however necessary for me here to enter into any refutation of it. Dr. Hoffman has done this fully, in his *Commentarius de differentia inter Hoffmanni doctrinam medico mechanicam et G. E. Stahlii medie organicam* ; and both Boerhaave and Haller, though no favorers of materialism, have maintained a doctrine very opposite to that of Stahl.

In my Physiology I have offered some arguments against the same : and I shall only add now, that whoever considers what has been said by Dr. Nichols in his *Oratio de Animalia Medica*, and by Dr. Gaubius in some parts of his Pathology, must perceive, that the admitting of such a capricious government of the animal economy, as these authors in some instances suppose, would at once lead us to reject all the physical and mechanical reasoning we might employ concerning the human body. Dr. Stahl himself seems to have been aware of this ; and therefore, in his Preface to Junker's *Conspicetus Theropix Specialis*, has acknowledged, that his general principle was not at all necessary ; which is in effect saying, that it is not compatible with any system of principles that ought to govern our practice. Upon this footing, I might have at once rejected the Stahlian principle ; but it is even dangerous to bring any such principle into view : for, after all Dr. Stahl had said in the passage just now referred to, I find, that, in the whole of their practice, both he and his followers have been very much governed by their general principle. Trusting much to the constant attention and wisdom of nature, they have proposed the *Art of curing by expectation* : have therefore, for the most part, proposed only very inert and frivolous remedies ; have zealously opposed the use of some of the most efficacious, such as opium and the Peruvian bark ; and are extremely reserved in the use of general remedies, such as bleeding, vomiting, &c.

Although these remarks, upon a system which may now be considered as exploded or neglected, may seem superfluous, I have been willing to give these strictures on the Stahlian system, that I might carry my remarks a little farther, and take this opportunity of observing, that in whatever manner we may explain what have been called the operations of nature, it appears to me that the general doctrine of *Nature curing diseases*, the so much vaunted *Hippocratic method* of curing, has often had a very baneful influence on the practice of physic, as either leading physicians into, or continuing them in a weak and feeble practice, and at the same time superseding or discouraging all the attempts of art. Dr. Huxham has properly observed, that even in the hands of Sydenham it had this effect. Although it may sometimes avoid the mischiefs of bold and rash practitioners, yet it certainly produces that caution and timidity which have ever opposed the introduction of new and efficacious remedies. The opposition to chemical medicines in the sixteenth and seventeenth centuries, and the noted condemnation of Antimony by the Medical Faculty of Paris, are to be attributed chiefly to those prejudices, which the physicians of France did not entirely get the better of for near a hundred years after. We may take notice of the reserve it produced in Boerhaave, with respect to the use of the Peruvian Bark. We have had lately published, under the title of *Constitutiones Epidemicas*, notes of the particular practice of the late Baron Van Swieten ;

upon which the editor very properly observes, That the use of the bark, in intermitting fevers, appears very rarely in that practice; and we know very well where Van Swieten learned that reserve.

I might go farther, and show how much the attention to the *Autocrateia*, allowed of, in one shape or other, by every sect, has corrupted the practice among all physicians, from Hippocrates to Stahl. It must however be sufficiently obvious, and I shall conclude the subject with observing, that although the *vis medicatrix naturæ* must unavoidably be received as a fact, yet, wherever it is admitted, it throws an obscurity upon our system; and it is only where the impotence of our art is very manifest and considerable, that we ought to admit of it in practice.

To finish our remarks upon the Stahlian System, I shall shortly observe, that it did not depend entirely upon the *Autocrateia*, but also supposed a state of the body and diseases that admitted of remedies, which, under the power and direction of the soul, acted upon the organization and matter of the body, so as to cure its diseases. Upon this footing, the Stahlian pathology turned entirely upon Plethora and Cacochymy. It was with respect to the former that they especially applied their doctrine of the *Autocrateia* in a very fanatical manner; and, with respect to the latter, they have been involved in a humoral pathology as much as the systematic physicians who had gone before them, and with a theory so incorrect, as not to merit now the smallest attention. After all, I ought not to dismiss the consideration of the Stahlian system, without remarking, that as the followers of this system were very intent upon observing the method of nature, so they were very attentive in observing the phenomena of diseases, and have given us in their writings many facts not to be found elsewhere.

While the doctrines of Stahl were prevailing in the university of Halle, Dr. Hoffman, a professor in the same university, proposed a system that was very different. He received into his system a great deal of the mechanical, Cartesian, and chemical doctrines of the systems which had appeared before: but, with respect to these, it is of no consequence to observe in what manner he modified the doctrines of his predecessors, as his improvements in these respects were no ways considerable, and no part of them now remain; and the real value of his works, beyond what I am just now going to mention, rests entirely on the many facts they contain. The merit of Dr. Hoffman and of his works is, that he made, or rather suggested an addition to the system, which highly deserves our attention. Of this I cannot give a clearer account than by giving it in the author's own words. In his *Medicina Rationalis Systematica*, Tom. III. § 1. chap. 4. he has given his *Genealogia morborum ex turbato solidorum et fluidorum mechanismo*; and in the 47th and last paragraph of this chapter, he sums up his doctrine in the following words: "Ex hice autem omnibus uberiorus haecenus excussis, per quam dilucide apparere arbitror, quod solus SPASMUS et simplex ATONIA, aquabilem, liberum, ac proportionatum sanguinis omnisque generis fluidorum motum, quibus excretionum successus et integritas functionum animi et corporis proxime nititur, turbando ac pervertendo, universam vitalem economiam fibruant ac destruant; atque hinc universa patologia longe relictus atque facilius EX VITIO MOTUM MICROSCOMICORUM IN SOLIDIS, quam EX VARIIS AFFECTIONIBUS VITIOSORUM HUMORUM, deduci atque explicari possit, adeoque omnis generis aegritudines interne, ad PRETERNATURALEM GENIRIS NERVOSI AFFECTIONES sint referenda. Etenim lysis quounque modo, vel vice per corpus discurrentibus, vel membranosis quibusvis nervosis partibus, illico motuum anomaliae, modo leviores, modo graviores subsiquuntur. Deinde de attenta observatio docet, motus quosvis morbosos principaliter sedim figere et tyrannidem exercere in nervosis corporis partibus, cuius generis frater omnes canales, quis ystaltico et distaltico motu pollentes, contentus succos trahunt, universum nimirum intestinorum et ventriculi ab asphrago ad anum canalem, tunc systema vasorum arteriosorum, ductuum biliariorum, salivarium, urinariorum et subcutaneorum, sunt quoque membranae nervosissimae cerebri et medullæ spinalis, præsertim hæc, quæ dura mater vocantur,

"organis sensoriis obductæ, nec non tunicæ illæ ac ligamenta, quæ ossa cingunt
 "artusque firmant. Nam nullus dolor, nulla inflammatio, nullus spasmus, nul-
 "la motus et sensus impotentia, nulla febris aut humoris illius excretio, accidit,
 "in qua non habet partes patiantur. Porro etiam onines, quæ morbos gignunt
 "cause, operationem suam potissimum perficiunt in partes motu et sensu præ-
 "ditas, et canales ex his coagimentatos, eorum motum, et cum hoc fluidorum
 "cursum, pervertendo; ita tamen, ut heuti variae indolis sunt, sic etiam varie
 "in nervæs partes agant, iijdemque noxam affracent. Demum omnia quoque
 "eximia virgutis medicamenta, non tam in partes fluidas, earum crasis ac
 "intemperiem corrigendo, quam potius in solidas et nervosas, earundem motus
 "alterando ac moderando, suam edunt operationem: de quibus tamen omni-
 "bus, in vulgaris usque eo recepta morborum doctrina, altum est silentium."

It is true that Dr. Willis had laid a foundation for this doctrine in his *Pathologia Cerebri et Nervorum*: and Baglivi had proposed a system of this kind in his *Specimen de fibra motrici et morbo*. But, in these writers, it was either not extensively applied to diseases, or was still so involved in many physiological errors, that they had attracted little attention; and Dr. Hoffman was the first who gave any tolerably simple and clear system on the subject, or pointed out any extensive application of it to the explanation of diseases.

There can be no sort of doubt that the phenomena of the animal economy in health and in sickness, can only be explained by considering the state and afflictions of the primary moving powers in it. It is to me surprising that physicians were so long of perceiving this, and I think we are therefore particularly indebted to Dr. Hoffman for putting us into the proper train of investigation; and it every day appears that physicians perceive the necessity of entering more and more into this inquiry. It was this, I think, which engaged Dr. Kaaw Boerhaave to publish his work, intitled *Impetu faciens*; as well as Dr. Gruibus to give the pathology of the *Solidum vivum*. Even the Baron Van Swieten has upon the same view thought it necessary, in at least one particular, to make a very considerable change in the doctrine of his master, as he has done in his *Commentary upon the 755th Aphorism*. Dr. Haller has advanced this part of science very much by his experiments on irritability and sensibility. In these, and in many other instances, particularly in the writings of Mr. Barthez of Montpellier, of some progress in the study of the afflictions of the Nervous System, we must perceive how much we are indebted to Dr. Hoffman for his so properly beginning it. The subject, however, is difficult; the laws of the Nervous System, in the various circumstances of the animal economy, are by no means ascertained; and from want of attention and observation, with the view to a system on this subject, the business appears to many as an inexplicable mystery. There is no wonder, therefore, that on such a difficult subject, Dr. Hoffman's system was imperfect and incorrect, and has had less influence on the writings and practice of physicians since his time than might have been expected. He himself has not applied his fundamental doctrine so extensively as he might have done; and he has every where intermixed an Ilunoral Pathology as incorrect and hypothetical as any other. Though he differed from his colleague Dr. Stahl in the fundamental doctrines of his system, it is but too evident that he was very much infected with the Stahlian doctrines of Plethora and Cacochymy, as may be observed throughout the whole course of his work; and particularly in his chapter *De morborum generatione ex nimia sanguinis quantitate et huinorum impuritate*.

But it is needless for me to dwell any longer upon the system of Hoffman; and I am next to offer some remarks on the System of Dr. Boerhaave, the cotemporary of both the other Systematics, and who, over all Europe, and especially in this part of the world, gained higher reputation than either of the others.

Dr. Boerhaave was a man of general erudition, and, in applying to medicine, he had carefully studied the auxiliary branches of Anatomy, Chemistry, and Botany, so that he excelled in each. In forming a System of Phsyic, he seems to have studied diligently all the several writings of both ancient and modern physicians; and, without prejudice in favor of any former systems, he endeavored to be a candid and genuine eclectic. Possessed of an excellent systematical genius, he gave a system superior to any that had ever before appeared. As in the great extent, and seemingly perfect consistency of system, he appeared to improve and refine upon every thing that had before been offered; and as in his Lectures he explained his doctrines with great clearness and elegance, he soon acquired a very high reputation, and his system was more generally received than any former had been since the time of Galen. Whoever will consider the merits of Dr. Boerhaave, and can compare his system with that of former writers, must acknowledge that he was very justly esteemed, and gave a system which was at that time deservedly valued.

But, in the progress of an inquisitive and industrious age, it was not to be expected that any system shuld last so long as Boerhaave's has done. The elaborate Commentary of Van Swieten on Boerhaave's system of practice, has been only finithed a few years ago; and though this Commentator has added many facts, and made some corrections, he has not, except in the particular mentioned above, made any improvement in the general system. It is even surprising that Boerhaave himself, though he lived near forty years after he had first formed his system, had hardly in all that time made any corrections of it or additions to it. The following is the most remarkable: in Aphorism 755, the words *forte et nervos, tam cerebri quam cerebelli cordi destinati inertia*, did not appear in any edition before the fourth; and what a difference of system this points at every physician must perceive.

When I first applied to the study of Phsyic, I learned only the system of Boerhaave; and even when I came to take a Professor's chair in this University, I found that system here in its entire and full force; and as I believe it still subsists in credit elsewhere, and that no other system of reputation has been yet offered to the world, I think it necessary for me to point out particularly the imperfections and deficiencieies of the Boerhaaveian system, in order to show the propriety and necessity of attempting a new one.

To execute this however so fully as I might, would lead me into a detail that can hardly be admitted of here; and I hope it is not necessary, as, I think, that every intelligent person, who has acquired any tolerable knowledge of the present state of our science, must, in many instances, perceive its imperfections. I shall therefore touch only upon the great lines of this system; and from the remarks I am to offer, trust that both the mistakes and deficiencieies which run through the whole of his works will appear.

Dr. Boerhaave's treatise of the diseases of the simple solid, has the appearance of being very clear and consistent, and was certainly considered by him as a fundamental doctrine; but, in my apprehension, it is neither correct nor extensively applicable. Not to mention the useless, and perhaps erroneous notion of the composition of earth and gluten, nor his mistake respecting the structure of compound membranes, nor his inattention to the state of the cellular texture, all of them circumstances which render his doctrine imperfect, I shall insist only upon the whole being very little applicable to the explaining the phenomena of health or sickness. The laxity or rigidity of the simple solid, does indeed take place at the different periods of life, and may perhaps, upon other occasions, occur as the cause of disease: but I presume that the state of the simple solid is, upon few occasions, either changeable or actually changed; and that in ninety nine cases of an hundred, the phenomena attributed to such a change do truly depend on the state of the *solidum vivum*; a circumstance which Dr. Boerhaave has hardly taken notice of in any part of his works. How much this shows the deficiency and imperfection of his system, I need not explain. The learned work of

Dr. Gaubius, above referred to, as well as many other treatises of late authors, point out sufficiently the defects and imperfections of Boerhaave on this subject.

After Dr. Boerhaave has considered the diseases of the solids, he, in the next place, attempts to explain the more simple diseases of the fluids; and there, indeed, he delivers a more correct doctrine of acid and alkali than had been given before: but, after all, he has done it very imperfectly. We have indeed, since his time, acquired more knowledge upon the subject of digestion; and so much as to know that a great deal more is yet necessary, to enable us to understand in what manner the animal fluids are formed from the aliments taken in. And although Dr. Boerhaave has fallen into no considerable error with respect to a morbid acidity in the stomach, he could not possibly be complete upon that subject; and his notion of the effects of acidity in the mass of blood seems to have been entirely mistaken, and is indeed not consistent with what he himself has delivered elsewhere.

His doctrine of alkali is somewhat better founded, but is probably carried too far; and the state of alkalescency and putrefaction, as well as all the other changes which can take place in the condition of animal fluids, are particulars yet involved in great obscurity, and are therefore still subjects of dispute.

There is another particular, in which Boerhaave's doctrine concerning the fluids, appears to me imperfect and unsatisfactory, and that is, in his doctrine *de Glutino Spontaneo*. The causes which he has assigned for it are by no means probable, and the actual existence of it is seldom to be proved. Some of the proofs adduced for the existence of the *phlegma calidum*, are manifestly founded on a mistake with respect to what has been called the inflammatory crust, (see Van Swieten's Commentary, page 96; and the many examples given by Boerhaave of a *glutinosum* appearing in the human body, (Aph. 75.) are all of them nothing more than instances of collections or concretions found, out of the course of the circulation.

If then we consider the imperfection of Dr. Boerhaave's doctrine with respect to the state and various condition of the animal fluids; and if at the same time we reflect how frequently he and his followers have employed the supposition of an actimony, or lensor of the fluids, as causes of disease, and for directing the practice; we must, as I apprehend, be satisfied, that his system is not only deficient and incomplete, but fallacious and apt to mislead. Although it cannot be denied that the fluids of the human body suffer various morbid changes, and that upon these, diseases may primarily depend; yet I must beg leave to maintain, that the nature of these changes is seldom understood, and more seldom still is it known when they have taken place: that our reasonings concerning them have been, for the most part, purely hypothetical; have therefore contributed nothing to improve, and have often misled the practice of physic. In this, particularly they have been hurtful, that they have withdrawn our attention from, and prevented our study of the notions of the animal system, upon the state of which the phenomena of diseases do more certainly and generally depend. Whoever then shall consider the almost total neglect of the state of the moving powers of the animal body, and the prevalence of an hypothetical humoral pathology, so conspicuous in every part of the Boerhaavian System, must be convinced of its very great defects, and perceive the necessity of attempting one more correct.

After giving this general view, it is not requisite to enter into particulars; but, I believe, there are very few pages of his aphorisms in which there does not occur some error or defect; although, perhaps, not to be imputed to the fault of Boerhaave, so much as to this, that since his time a great collection of new facts has been acquired by observation and experiment. This indeed affords the best and most solid reason for attempting a new system: for when many new facts have been acquired, it becomes requisite that these should be incorporated into a system, whereby not only particular

subjects may be improved, but the whole may be rendered more complete, consistent, and useful. Every system indeed must be valuable in proportion to the number of facts that it embraces and comprehends; and Mons. Quesnay could not pay a higher compliment to the System of Boerhaave, than by saying, that it exhibited *La médecine collective*.

But here it will, perhaps, be suggested to me, that the only useful work, on the subject of physic, is the making a collection of all the facts that relate to the art, and therefore of all that experience has taught us with respect to the cure of diseases, I agree entirely in the opinion, but doubt if it can ever be properly accomplished without aiming at some system of principles, by a proper induction and generalisation of facts; at least I am persuaded that it can be done not only very safely, but most usefully in this way. This however, must be determined by a trial. I know that the late Mr. Lieutaud has attempted a work on the plan of collecting facts, without any reasoning concerning their causes: And while I am endeavoring to give some account of the present state of Physic, I cannot dismiss the subject without offering some remarks upon the promising *Synopsis universæ medicinæ*, composed by the 'first physician of a learned and ingenuous nation.'

In this work there are many facts and much observation from the author's own experience, which may be useful to those who have otherwise acquired some knowledge and discernment; but, throughout the whole work, there is such total want of method, arrangement, system, or decision, that, in my humble opinion, it can be of little use, and may prove very perplexing to those who are yet to learn. The distinction of the genera of diseases, the distinction of the species of each, and often even that of the varieties, I hold to be a necessary foundation of every plan of Physic, whether dogmatical or empirical. But very little of this distinction is to be found in the work of Mr. Lieutaud; and in his preface he tells us that he meant to neglect such *arguta sedulitas*. And indeed his method of managing his subject, must certainly interrupt and retard all methodical nosology. His arrangement of diseases is according to no affinity, but that of the slightest and uninstructive kind, the place of the body which they happen to affect. His *Generalia et incertæ sedis*, have hardly any connection at all; the titles *Rheumatismus*, *Hypocondriosis*, *Hydrops*, follow one another. When he does attempt any general doctrine, it is not till long after he has treated of the widely scattered particulars. Under each particular title which he assumes, he has endeavored to enumerate the whole of the symptoms that ever appeared in a disease under that title; and this without aiming at any distinction between the essential and accidental symptoms, or marking the several combinations under which these symptoms do for the most part steadily appear. From the concurrence of accidental symptoms, the variety of the same disease is frequently considerable, a circumstance necessarily perplexing and distracting to young practitioners; but it seems strange to me, that an experience of thirty years, in considerable practice, could do nothing to relieve them.

Mr. Lieutaud has at the same time increased the confusion that must arise from this want of distinction, by his considering as primary diseases, what appear to me to be the symptoms, effects, and sequels of other diseases only. Of this I think the *Aësus morbosus*, *Virium exolutio*, *Dolores*, *Stagnatio sanguinis*, *Purulentia*, *Tremor*, *Pervigilium*, *Raucedo*, *Suffocatio*, *Vomitus*, *Empyema*, *Syngultus*, *Vomitus*, *Dolor Stomachi*, *Tenesmus*, all treated of under separate titles, are examples. A general Symptomatologia may be a very useful work, with a view to a system of Pathology; but, with a view to Practice without any System, it must have bad effects, as leading only to a palliative practice, and diverting from the proper efforts towards obtaining a radical cure. Mr. Lieutaud, indeed, has endeavored to exhibit the symptoms above mentioned as so many *primary diseases*: but he has seldom succeeded in this; and, in delivering the practice, he commonly finds it

necessary to consider them as symptoms, and that not without some theory, implied or expressed, with respect to their proximate causes. His title of *Dolores* may be taken as an example of this; and from which it may be readily perceived how far such treatises can be really useful.

In establishing a proper Pathology, there is nothing that has been of more service than the Dissection of morbid bodies. Mr. Lieutaud has been much and most commendably employed in this way; and in this *Synopsis* he has endeavored to communicate his knowledge on the subject; but in my humble opinion, he has seldom done it in a manner that can be useful. In the same way that he has delivered the symptoms of diseases without any instructive arrangement, so, on the subject of the appearances after death, he has mentioned every morbid appearance that had ever been observed after the disease of which he is then treating: but these appearances are strangely huddled together, without any notice taken of those which belong to one set of symptoms or to another; and, with regard to the whole, without any attempt to distinguish between the causes of diseases and the causes of death; although the want of such distinction is the well known ground of falacy upon this subject. I take for an example, the appearances mentioned as having been observed after dropsy. Here morbid appearances, found in every part of the body, in every cavity of it, and in every viscus contained in these cavities, are enumerated; but which of these morbid states are more frequent or more rare, and which had been more particularly connected with the different causes, or with the different state of symptoms previously recited, we are not informed, nor has he enabled us to discover. In short, the dissection of morbid bodies has been, and may be highly useful; but, in order to be so, it must be under a different management from what we find either in this *Synopsis*, or even in the *Historia Anatomico medica*.

I cannot dismiss this subject without remarking, that the dissection of morbid bodies is chiefly valuable upon account of its leading us to discover the proximate causes of diseases; and the great and valuable work of the illustrious Morgagni, is properly intitled *De sedibus et causis morbi*. It may well seem surprising then, that Lieutaud should find the whole of proximate causes *atra caligine mersas*; and that he should never have thought of applying his dissections towards the ascertaining at least some of these.

But let me now proceed to consider the important part of every practical work, and of this *Synopsis universæ medicinæ*; that is, the method of curing diseases.

Here, again, upon the same plan as in giving the histories of disease, the method of cure is delivered by enumerating the whole of the remedies that have ever been employed in a disease under the title prefixed; without assigning the species, or the circumstances to which the remedies, though of a very different and sometimes opposite nature, are peculiarly adapted. On the subject of Asthma, he very justly observes, that physicians have been to blame in confounding under this title almost all the species of *Dyspnœa*; and he himself very properly considers Asthma as a disease distinct from all the other cases of *Dyspnœa*. Still, however, he considers asthma as of many different species, arising from many different causes, which, till we understand better, we cannot attempt to remove. Notwithstanding of all this, he proceeds to deliver a very general cure. *Parum abesi*, says he, *quin specifi titulo gaudeant pectoralia, vulneraria, et incidentia!* But from such language I receive no clear idea; nor can I obtain any clear direction from the enumeration of his medicines. *Beccæ juniperi, gummi tragacanthum, vel ammoniacum, sapo, aqua picea, terebinthina, &c.* que tamen haud indiscriminatim sunt usurpanda, sed pro re nata, delectu opus est. Very justly indeed, *delectu opus est*; but here, as in many other instances, he gives us no sort of assistance.

From his endeavors, though not always successful, to neglect all system his practice is generally delivered in a very indecisive manner; or, what has

the same effect, in a way so conditional as will render it always difficult and often impossible, for a young practitioner to follow him. Let us take, for example, his cure of Dropsy. "The cure may be begun by blood letting, "in certain conditions; but in others it cannot be employed without danger." It gives relief in difficult breathing but after it is practised the symptoms "are aggravated and rendered more obstinate. It is not to be concealed that some persons have been cured by repeated blood lettings, or spontaneous haemorrhag~~is~~s; but it is at the same time known, that such a remedy inopportunely employed, has in many instances hastened on the fatal event."

In the same manner he treats of vomiting, purging, sweating, and the use of mineral waters; but I must confess that he has no where removed any of my doubts or difficulties, and indeed he has sometimes increased them. He says, that hepatics or aperients, such as the *lingua cervina*, *herba capillares*, &c. deserve commendation, but that, when the disease has arisen to a certain degree, they have been, *for the most part, found to be useless*. He observes, that the powder of toads given in wine, to the quantity of a scruple or more, has succeeded with severals.

Such are commonly the methods of cure delivered by Mr. Lieutaud, *longiori et forte felicissima praxiedoctus*.

It would be tedious to enter further into that detail, which a criticism of this immethodical and uninstructive work might lead me into; but if the bounds proper for this preface did not prevent me, I would particularly show that the work is far from being free from those reasonings which the author pretends to avoid, and would affect even to despise. He still holds the doctrines of the CONCOCTION and CRITICAL EVACUATION of MORBIFIC MATTER; doctrines depending upon subtle theories, and which, in my opinion, can in no ways be ascertained as matters of fact. Mr. Lieutaud likewise is still very much upon the old plan of following NATURE, and therefore gives often what I consider as a feeble and inert practice. The *humectantia*, *diluentia*, *demulcentia*, *et temperantia*, are with him very universal remedies, and often those which alone are to be employed.

The mention of these medicines might lead me to take notice of Mr. Lieutaud's second volume, in which, *ab insulsa remediorum faragine alienus*, he promises a great reformation upon the subject; but this falls so far short of the idea of British physicians, that I need not make any remarks upon it. With respect to his list of simples, or *Emporetica*, as he is pleased to term them, an English apothecary would smile at it; and with respect to his *Officinalia*, I believe they are to be found no where but in the *Codex Medicamentarius* of Paris; and in his *Magistralia*, his doses are generally such as the most timid practitioner of this country would hardly descend to, and such as none of our practitioners of experience would depend upon. In short, the whole of the work, both with respect to the theories with which it abounds, and to the facts which it gives will not, in my apprehension, bear any serious criticism. But I must conclude, and shall only say further that such as I have represented it, is this work, executed by a man of the first rank in the profession. It is indeed for that reason I have chosen it as the example of a work, upon the plan of giving facts only, and of avoiding the study or even the notice of the proximate causes of diseases; and with what advantage such a plan is pursued, I shall leave my readers to consider.

In the following treatise I have followed a different course. I have endeavored to collect the facts relative to the diseases of the human body, as fully as the nature of the work and the bounds necessarily prescribed to it would admit: But I have not been satisfied with giving the facts, without endeavoring to apply them to the investigation of proximate causes, and upon these to establish a more scientific and decided method of cure. In aiming at this, I flatter myself that I have avoided hypothesis, and what have been called theories. I have, indeed, endeavored to establish many general doctrines, both physiological and pathological; but I trust that these are on-

ly a generalisation of facts, or conclusions from a cautious and full induction : And if any one shall refuse to admit, or directly shall oppose my general doctrines, he must do it by showing that I have been deficient or mistaken in assuming and applying facts. I have myself been jealous of my being sometimes imperfect in these respects; but I have generally endeavored to obviate the consequences of this, by proving, that the proximate causes which I have assigned, are true in fact, as well as deductions from any reasoning that I may seem to have employed. Further, to obviate any dangerous fallacy in proposing a method of cure, I have always been anxious to suggest that which, to the best of my judgment, appeared to be the method approved of by experience, as much as it was the consequence of system.

Upon this general plan I have endeavored to form a system of physic that should comprehend the whole of the facts relating to the science; and that will, I hope, collect and arrange them in better order than has been done before, as well as point out in particular those which are still wanting to establish general principles. This which I have attempted, may, like other systems, hereafter suffer a change ; but I am confident that we are at present in a better train of investigation than physicians were in before the time of Dr. Hoffman. The affections of the motions and moving powers of the animal economy, must certainly be the leading inquiry in considering the diseases of the human body. The inquiry may be difficult; but it must be attempted, or the subject must be deserted altogether. I have, therefore, assumed the general principles of Hoffman, as laid down in the passage which I have quoted above ; and if I have rendered them more correct and more extensive in their application, and more particularly, if I have avoided introducing the many hypothetical doctrines of the Humoral Pathology which disfigured both his and all the other systems which have hitherto prevailed; I hope I shall be excused for attempting a system, which upon the whole may appear new.

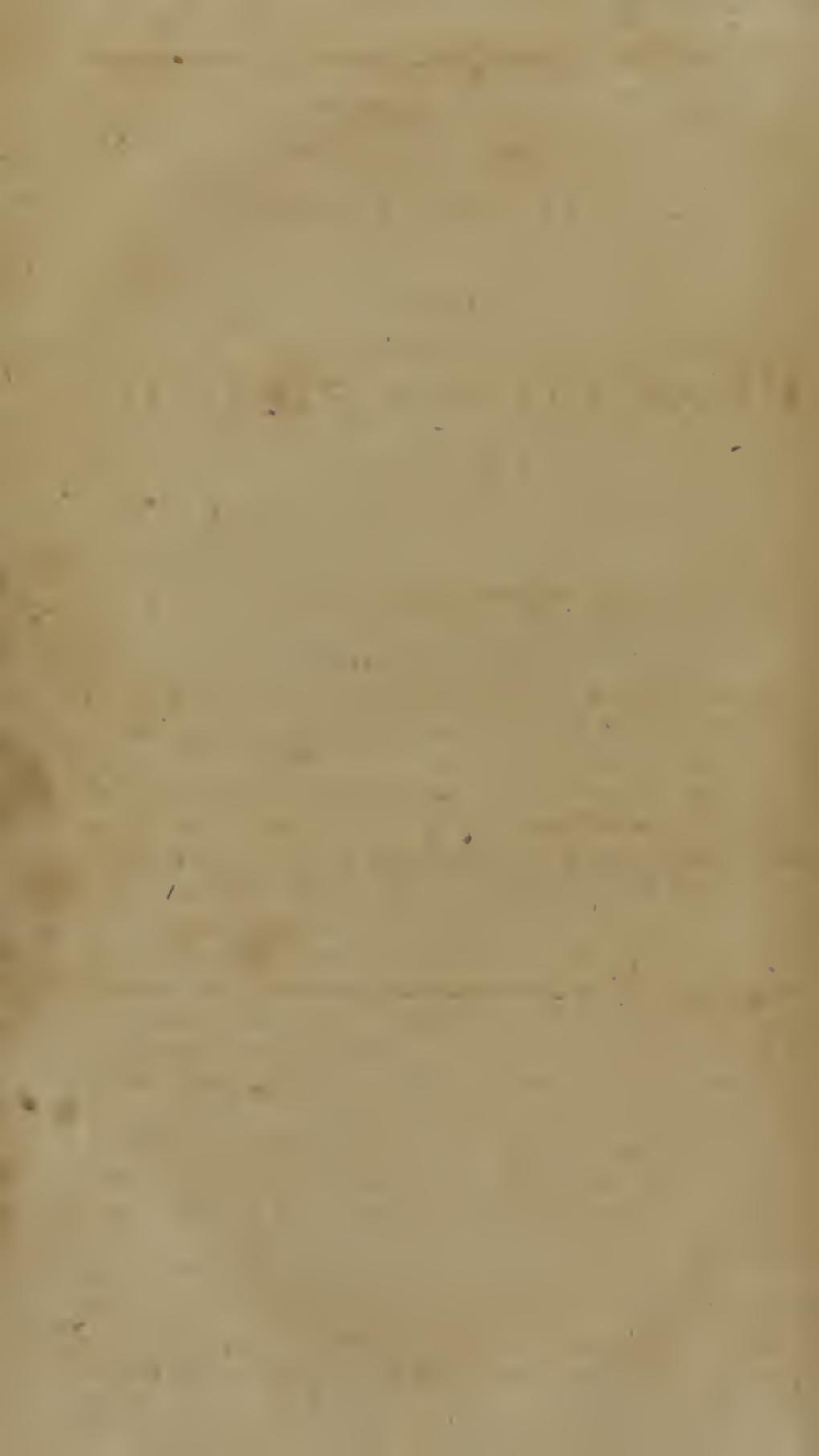
EDINBURGH, }
Nov. 1783. }

P A R T I.

OF PYREXIAE,

OR

FEBRILE DISEASES.



FIRST LINES
OF THE
PRACTICE OF PHYSIC.

INTRODUCTION.

i. IN teaching the PRACTICE of PHYSIC, we endeavor to give instruction for discerning, distinguishing, preventing and curing diseases, as they occur in particular persons.

ii. The art of DISCERNING and DISTINGUISHING diseases, may be best attained by an accurate and complete observation of their phenomena, as these occur in concourse and in succession, and by constantly endeavoring to distinguish the peculiar and inseparable concurrence of symptoms, to establish a METHODICAL NOSOLOGY, or an arrangement of diseases according to their genera and species, founded upon observation alone, abstracted from all reasoning. Such an arrangement I have attempted in another work, to which, in the course of the present, I shall frequently refer.

iii. The PREVENTION of diseases depends upon the knowledge of their remote causes, which is partly delivered in the general Pathology, and partly to be delivered in this treatise.

iv. The CURE of diseases is chiefly, and almost unavoidably founded in the knowledge of their proximate causes. This requires an acquaintance with the institutions of Medicine; that is, the knowledge of the struc-

ture, action, and functions of the human body ; of the several changes which it may undergo ; and of the several powers by which it can be changed. Our knowledge of these particulars, however, is still incomplete, is in many respects doubtful, and has been often involved in mistake and error. The doctrine, therefore, of proximate causes, founded upon that knowledge, must be frequently precarious and uncertain. It is however possible for a judicious physician to avoid what is vulgarly called theory, that is, all reasoning founded upon hypothesis, and thereby many of the errors which have formerly taken place in the Institutions of Medicine. It is possible also for a person who has an extensive knowledge of the facts relative to the animal economy in health and in sickness, by a cautious and complete induction, to establish many general principles which may guide his reasoning with safety ; and while at the same time a physician admits, as a foundation of practice, those reasonings only which are simple, obvious, and certain, and for the most part admits as proximate causes those alone that are established as matters of fact rather than as deductions of reasoning, he may with great advantage establish a system of practice chiefly founded on the doctrine of proximate causes. But when this cannot be done with sufficient certainty, the judicious and prudent physician will have recourse to EXPERIENCE alone ; always, however, aware of the hitherto incomplete and fallacious state of Empiricism.

v. With a strict attention to these considerations in the whole of the following treatise, I proceed to treat of particular diseases in the order of my Methodical Nosophagy.

PART I.

OF PYREXIÆ, OR FEBRILE DISEASES.

VI. PYREXIÆ, or febrile diseases, are distinguished by the following appearances : After beginning with some degree of cold shivering, they show some increase of heat, and an increased frequency of pulse, with the interruption and disorder of several functions, particularly some diminution of strength in the animal functions *.

VII. Of these Pyrexiae I have formed a class, and have subdivided it into the five orders of FEVERS, INFLAMMATIONS, ERUPTIONS, HEMORRHAGIES, and FLUXES. See Synopsis Nosologiae Methodicæ, Edit. 2. 1780.

* This, if considered as a concise description of the most usual symptoms which occur in fever, is perhaps the most judicious that could be made. As a definition, however, it is somewhat defective ; which is entirely to be ascribed to the difficulty of making a selection, where there is not one symptom which deserves to be ranked as Pathognomonic. As we cannot, therefore, expect an unexceptionable definition of a disease which assumes so many various appearances, and to which no peculiar symptom exclusively belongs, it will be sufficient if those morbid affections are pointed out, which are generally present, and whose concurrence or succession serve, in most instances, to denote the existence of fever.

BOOK I.

OF FEVERS.

CHAP. I.

OF THE PHENOMENA OF FEVERS.

viii. THOSE diseases are more strictly called FEVERS, which have the general symptoms of Pyrexia, without having amongst with them any topical affection that is essential and primary, such as the other orders of the Pyrexiae always have.

ix. Fevers, as differing in the number and variety of their symptoms, have been very properly considered as of distinct genera and species*. But we suppose that

*The following are the principal distinctions of fevers, as established by Dr. Cullen in his *Synopsis of Nosology* :

SECT. I. *Intermittent Fevers* arise from marsh miasma, consist of repeated paroxysms, alternated with an apyrexia, or at least with a distinct remission ; the paroxysms return with a marked exacerbation, and for the most part with cold shivering : Not more than one paroxysm in the course of each day.

Gen. 1. *Tertian*, consists of similar paroxysms, recurring at the interval of forty eight hours ; accession about noon.

Gen. 2. *Quartan*, consists of similar paroxysms, repeated at the interval of seventy two hours ; accession after noon.

Gen. 3. *Quotidian* consists of similar paroxysms, returning at the interval of twenty four hours ; accession in the morning.

SECT. II. *Continued Fevers*. Fever without intermission, not arising from marsh miasma, but continuing with remissions and exacerbations, although sometimes not very evident ; two paroxysms each day.

Gen. 4. *Synocha*. Heat very much increased ; pulse frequent, strong, and hard ; urine high colored ; sensess little impaired.

Gen. 5. *Typhus*. A contagious disease ; heat little augmented ; pulse small, weak, and for the most part frequent ; urine little changed ; sensess very much disturbed ; great prostration of strength.

Gen. 6. *Synochus*. A contagious disease ; fever composed of synocha and typhus ; in the beginning synocha predominates, and typhus towards the end.

there are certain circumstances in common to all the diseases comprehended under this order, which are therefore those essentially necessary to and properly constituting the nature of fever. It is our business especially, and in the first place, to investigate these; and I expect to find them as they occur in the paroxysm, or fit, of an intermittent fever, as this is most commonly formed.

x. The phenomena to be observed in such a paroxysm are the following: The person is affected, first, with a langor, or sense of debility, a sluggishness in motion, and some uneasiness in exerting it with frequent yawning and stretching. At the same time the face and extremities become pale, the features shrink, the bulk of every external part is diminished, and the skin, over the whole body, appears constricted, as if cold had been applied to it: At the coming on of these symptoms, some coldness of the extremities, though little taken notice of by the patient, may be perceived by another person. At length the patient himself feels a sensation of cold, commonly first in his back, but from thence passing over the whole body; and now his skin feels warm to another person. The patient's sense of cold increasing, produces a tremor in all his limbs, with frequent successions or rigors of the trunk of the body. When this sense of cold, and its effects, have continued for some time, they become less violent, and are alternated with warm flushings. By degrees the cold goes off entirely, and a heat greater than natural prevails, and continues over the whole body. With this heat the color of the skin returns, and a preternatural redness appears, especially in the face. Whilst the heat and redness come on, the skin is relaxed and smoothed, but for some time continues dry. The features of the face, and other parts of the body, recover their usual size, and become even more turgid. When the heat, redness, and turgescence have increased and continued for some time, a moisture appears upon the forehead, and by degrees becomes a sweat, which gradually extends downwards over the whole body. As this sweat continues to flow, the heat of the body abates; the sweat, after con-

tinuing some time, gradually ceases ; the body returns to its usual temperature, and most of the functions are restored to their ordinary state.

XI. This series of appearances gives occasion to divide the paroxysm into three different stages, which are called the COLD, the HOT, and the SWEATING STAGES, or *Fits*.

In the course of these, considerable changes happen in the state of several other functions, which are now to be mentioned.

XII. Upon the first approach of langor, the pulse becomes sometimes slower, and always weaker than before. As the sense of cold comes on, the pulse becomes smaller, very frequent, and often irregular. As the cold abates, and the heat comes on, the pulse becomes more regular, hard, and full, and in these respects increases till the sweat breaks out. As the sweat flows, the pulse becomes softer and less frequent, till, the sweat ceasing altogether, it returns to its usual state.

XIII. The respiration also suffers some changes. During the cold stage, the respiration is small, frequent, and anxious, and is sometimes attended with a cough. As the hot stage comes on, the respiration becomes fuller and more free, but continues still frequent and anxious, till the flowing of the sweat relieves the anxiety, and renders the breathing less frequent and more free. With the ceasing of the sweat the breathing returns to its ordinary state.

XIV. The natural functions also suffer a change. Upon the approach of the cold stage, the appetite for food ceases, and does not return till the paroxysm be over, or the sweat has flowed for some time. Generally, during the whole of the paroxysm, there is not only a want of appetite, but an aversion from all solid and especially animal food. As the cold stage advances, there frequently come on a sickness and nausea, which often increase to a vomiting of a matter that is for the most part bilious. This vomiting commonly puts an end to the cold stage, and brings on the hot. As the hot stage advances,

the nausea and vomiting abate, and when the sweat breaks out, they generally cease altogether.

xv. A considerable degree of thirst is commonly felt during the whole course of the paroxysm. During the cold stage, the thirst seems to arise from the dryness and clamminess of the mouth and fauces ; but during the hot stage, from the heat which then prevails over the whole body ; and as the sweat flows, the mouth becomes moister, and the thirst, together with the heat, gradually abates.

xvi. In the course of a paroxysm, there is often a considerable change in the state of the secretions. The circumstances just now mentioned show it in the secretion of the saliva and mucus of the mouth ; and it is still more remarkable with respect to the urine. During the cold stage, the urine is almost colorless, and without cloud or sediment. In the hot stage, it becomes high colored, but is still without sediment. After the sweat has flowed freely, the urine deposits a sediment commonly lateritious, and continues to do so for some time after the paroxysm is over.

xvii. Excepting in certain uncommon cases which are attended throughout with a diarrhoea, stools seldom occur till towards the end of a paroxysm, when commonly a stool happens, and which is generally of a loose kind.

xviii. Analogous to these changes in the state of the secretions, it frequently happens, that tumors subsisting on the surface of the body, suffer, during the cold stage of fevers, a sudden and considerable detumescence ; but generally, though not always, the tumors return to their former size during the sweating stage. In like manner, ulcers are sometimes dried up during the cold stage, and return again to discharge matter during the sweating stage, or after the paroxysm is over.

xix. Certain changes appear also in sensation and thought. During the cold stage, the sensibility is often greatly impaired, but when the hot stage is formed, the sensibility is recovered, and often considerably increased.

xx. With respect to the intellectual functions, when the cold stage comes on, attention and recollection become difficult, and continue more or less so during the whole paroxysm. Hence some confusion of thought takes place, and often arises to a delirium, which sometimes comes on at the beginning of the cold stage, but more frequently not till the hot stage be formed.

xxi. It belongs also to this place to remark, that the cold stage sometimes comes on with a drowsiness and stupor, which often increase to a degree that may be called comatose or apoplectic.

xxii. We have still to add, that sometimes, early in the cold stage, a headache comes on, but which more commonly is not felt till the hot stage be formed, and then is usually attended with a throbbing of the temples. The headache continues till the sweat breaks out, but as this flows more freely, that gradually goes off. At the same time with the headache, there are commonly pains of the back and of some of the great joints, and these pains have the same course with the headache.

xxiii. These are nearly the whole, and are at least the chief of the phenomena which more constantly appear in the paroxysm of an intermittent fever ; and we have pointed out their ordinary concourse and succession. With respect to the whole of them, however, it is to be observed, that in different cases the several phenomena are in different degrees : that the series of them is more or less complete ; and that the several parts or stages in the time they occupy are in a different proportion to one another.

xxiv. It is very seldom that a fever consists of a single paroxysm, such as we have now described ; and it more generally happens, after a certain length of time has elapsed from the ceasing of the paroxysm, that the same series of phenomena again arises, and observes the same course as before ; and these states of FEVER and APYREXIA often continue to alternate with one another for many times. In such cases, the length of time from the end of one paroxysm to the beginning of another, is called an INTERMISSION, and the length of

time from the beginning of one paroxysm to the beginning of another next succeeding, is called an INTERVAL.

xxv. When the disease consists of a number of paroxysms, it is generally to be observed, that the intervals between them are nearly equal ; but these intervals are of different lengths in different cases. The most usual interval is that of forty eight hours, which is named the TERTIAN period. The next most common is that of seventy two hours, and is named the QUARTAN period. Some other intervals also are observed, particularly one of twenty four hours, named therefore the QUOTIDIAN ; and the appearance of this is pretty frequent. But all other intervals, longer than that of the quartan, are extremely rare, and probably are only irregularities of the tertian or quartan periods.

xxvi. The paroxysms of pure intermittent fevers are always finished in less than twenty four hours ; and though it happens that there are fevers which consist of repeated paroxysms, without any entire intermission between them ; yet in such cases it is observed, that though the hot and sweating stages of the paroxysm do not entirely cease before the twenty four hours from their beginning have expired, they suffer, however, before that time, a considerable abatement or REMISSION of their violence ; and, at the return of the quotidian period, a paroxysm is in some shape renewed, which runs the same course as before. This constitutes what is called a REMITTENT FEVER.

xxvii. When in these remittents the remission is considerable, and the return of a new paroxysm is distinctly marked by the symptoms of a cold stage at the beginning of it, such fevers retain strictly the appellation of REMITTENTS. But when it happens, as it does in certain cases, that the remission is not considerable, is perhaps without sweat, and that the returning paroxysm is not marked by the most usual symptoms of a cold stage, but chiefly by the aggravation or EXACERBATION of a hot stage, the disease is called a CONTINUED FEVER.

xxviii. In some cases of continued fever, the remissions and exacerbations are so inconsiderable as not to be easily observed or distinguished ; and this has led physicians to imagine that there is a species of fever subsisting for several days together, and seemingly consisting of one paroxysm only. This they have called a **CONTINENT FEVER** ; but, in a long course of practice, I have not had an opportunity of observing such a fever.

xxix. It is however to be observed here, that the fevers of a continued form are to be distinguished from one another ; and that, while some of a very continued form do still belong the section of intermittents, there are others which, though still consisting of separate and repeated paroxysms, yet, as different by their causes and circumstances from intermittents, are to be distinguished from the whole of these, and are more strictly to be called and considered as **CONTINUED**. Such are most of those which have been commonly supposed to be **CONTINENT** ; and those which by most writers have been simply named **CONTINUED** ; and which term I have employed as the title of a section, to be distinguished from that of **INTERMITTENT**.

I shall here add the marks by which, in practice, these different continued fevers may be distinguished from one another.

Those fevers of a continued form, which, however, still belong to the section of Intermittents, may be distinguished by their having passed from an intermittent or remittent form to that of a continued ; by their showing some tendency to become intermittent, or at least remittent ; by their being known to have been occasioned by marsh miasmata ; and, for the most part, by their having but one paroxysm, or one exacerbation and remission, in the course of twenty four hours.

On the other hand, Continued Fevers, to be more strictly so called, may be distinguished by their showing little tendency to become intermittent or remittent in any part of their course, and especially after the first week of their continuance ; by their being occasioned

by human contagion, at least by other causes than the marsh miasmata ; and by their having pretty constantly an exacerbation and remission twice in the course of every twenty four hours. In both cases, the knowledge of the nature of the epidemic for the time prevailing, may have a great share in determining the nature of the particular fever.

xxx. With respect to the form, or TYPE of fevers, this further may be observed, That the quartan, while it has the longest interval, has, at the same time the longest and most violent cold stage ; but, upon the whole, the shortest paroxysm : That the tertian having a shorter interval than the quartan, has, at the same time a shorter and less violent cold stage, but a longer paroxysm : And, lastly, that the quotidian, with the shortest interval, has the least of a cold stage, but the longest paroxysm.

xxxI. The type of fevers is sometimes changed in their course. When this happens, it is generally in the following manner : Both tertians and quartans change into quotidiants, quotidiants into remittents, and these last become often of the most continued kind. In all these cases, the fever has its paroxysms protracted longer than usual, before it changes into a type of more frequent repetition.

xxxII. From all this a presumption arises, that every fever consists of repeated paroxysms, differing from others chiefly in the circumstances and repetition of the paroxysms, and therefore that it was allowable for us to take the paroxysm of a pure intermittent as an example and model of the whole.

C H A P. II.

OF THE PROXIMATE CAUSE OF FEVER.

xxxiii. THE proximate cause of fever seems hitherto to have eluded the research of physicians, and I shall not pretend to ascertain it in a manner that may remove every difficulty, but I shall endeavor to make an approach towards it, and such as I hope may be of use in conducting the practice in this disease; while at the same time I hope to avoid several errors which have formerly prevailed on this subject.

xxxiv. As the hot stage of fever is so constantly preceded by a cold stage, we presume that the latter is the cause of the former, and therefore that the cause of the cold stage is the cause of all that follows in the course of the paroxysm. See Boerh. Aph. 756.

xxxv. To discover the cause of the cold stage of fevers, we may observe, that it is always preceded by strong marks of a general debility prevailing in the system. The smallness and weakness of the pulse, the paleness and coldness of the extreme parts, with the shrinking of the whole body, sufficiently show that the action of the heart and larger arteries is, for the time, extremely weakened. Together with this, the languor, inactivity, and debility of the animal motions, the imperfect sensations, the feeling of cold while the body is truly warm, and some other symptoms, all show that the energy of the brain is, on this occasion, greatly weakened; and I presume that as the weakness of the action of the heart can hardly be imputed to any other cause, this weakness also is a proof of the diminished energy of the brain.

xxxvi. I shall hereafter endeavor to show, that the most noted of the remote causes of fever, as contagion, miasmata, cold, and fear, are of a sedative nature, and therefore render it probable that a debility is induced. Likewise, when the paroxysms of a fever have ceased to be repeated, they may again be renewed, and are most

commonly renewed by the application of debilitating powers. And further, the debility which subsists in the animal motions and other functions through the whole of fever, renders it pretty certain that sedative or debilitating powers have been applied to the body.

XXXVII. It is therefore evident, that there are three states which always take place in fever, a state of debility, a state of cold, and a state of heat ; and as these three states regularly and constantly succeed each other in the order we have mentioned them, it is presumed that they are in the series of cause and effect with respect to one another. This we hold as a matter of fact, even although we should not be able to explain in what manner, or by what mechanical means these states severally produce each other.

XXXVIII. How the state of debility produces some of the symptoms of the cold stage may perhaps be readily explained, but how it produces all of them, I cannot explain otherwise than by referring the matter to a general law of the animal economy, whereby it happens, that powers which have a tendency to hurt and destroy the system, often excite such motions as are suited to obviate the effects of the noxious power. This is the *vis medicatrix naturæ*, so famous in the schools of physic, and it seems probable that many of the motions excited in fever are the effects of this power.

XXXIX. That the increased action of the heart and arteries which takes place in the hot stage of fevers, is to be considered as an effort of the *vis medicatrix naturæ*, has been long a common opinion among physicians, and I am disposed to assert that some part of the cold stage may be imputed to the same power. I judge so, because the cold stage appears to be universally a means of producing the hot ; because cold, externally applied, has very often similar effects ; and more certainly still, because it seems to be in proportion to the degree of tremor in the cold stage, that the hot stage proceeds more or less quickly to a termination of the paroxysm, and to a more complete solution and longer intermission. See XXX.

XL. It is to be particularly observed, that, during the cold stage of fever, there seems to be a spasm induced every where on the extremities of the arteries, and more especially of those upon the surface of the body. This appears from the suppression of all excretions and from the shrinking of the external parts ; and although this may perhaps be imputed, in part, to the weaker action of the heart in propelling the blood into the extreme vessels ; yet as these symptoms often continue after the action of the heart is restored, there is reason to believe, that a spasmodic constriction has taken place ; that it subsists for some time, and supports the hot stage ; for this stage ceases with the flowing of the sweat, and the return of other excretions, which are marks, of the relaxation of vessels formerly constricted, Hoffman, Med. Rat. System. Tom. IV. P. I. sect. I. cap. I. art. 4.

XLI. The idea of fever, then, may be, that a spasm of the extreme vessels, however induced, proves an irritation to the heart and arteries ; and that this continues till the spasm is relaxed or overcome. There are many appearances which support this opinion ; and there is little doubt that a spasm does take place, which proves an irritation to the heart, and therefore may be considered as a principal part in the proximate cause of fever. It will still, however, remain a question, what is the cause of this spasm ; whether it be directly produced by the remote causes of fever, or if it be only a part of the operation of the *vis medicatrix naturæ*.

XLII. I am disposed to be of the latter opinion ; because, in the first place, while it remains still certain that a debility lays the foundation of fever, it is not obvious in what manner the debility produces the spasm, and, what seems to be its effect, the increased action of the heart and arteries ; and, secondly, because in almost all the cases in which an effort is made by the *vis medicatrix naturæ*, a cold fit, and a spasm of the extreme vessels, are almost always the beginnings of such an effort. See Gaub. Pathol. Medicin. art. 750.

XLIII. It is therefore presumed, that such a cold fit and spasm at the beginning of fever, is a part of the op-

eration of the *vis medicatrix*; but, at the same time, it seems to me probable, that during the whole course of the fever, there is an atony subsisting in the extreme vessels, and that the relaxation of the spasm requires the restoring of the tone and action of these.

XLIV. This it may be difficult to explain; but I think it may be ascertained as a fact, by the consideration of the symptoms which take place with respect to the functions of the stomach in fevers, such as the anorexia, nausea, and vomiting (xiv.)

From many circumstances it is sufficiently certain, that there is a consent between the stomach and surface of the body; and in all cases of the consent of distant parts, it is presumed to be by the connection of the nervous system; and that the consent which appears is between the sentient and moving fibres of the one part with those of the other, is such, that a certain condition prevailing in the one part occasions a similar condition in the other.

In the case of the stomach and surface of the body, the consent particularly appears by the connection which is observed between the state of the perspiration and the state of the appetite in healthy persons; and if it may be presumed that the appetite depends upon the state of tone in the muscular fibres of the stomach, it will follow, that the connection of appetite and perspiration depends upon a consent between the muscular fibres of the stomach and the muscular fibres of the extreme vessels, or of the organ of perspiration, on the surface of the body.

It is further in proof of the connection between the appetite and perspiration, and, at the same time, of the circumstances on which it depends, that cold applied to the surface of the body, when it does not stop perspiration, but proves a stimulus to it, is always a powerful means of exciting appetite.

Having thus established the connection or consent mentioned, we argue, that as the symptoms of anorexia, nausea, and vomiting, in many cases, manifestly depend upon a state of debility or loss of tone in the muscular

fibres of the stomach ; so it may be presumed, that these symptoms, in the beginning of fever, depend upon an atony communicated to the muscular fibres of the stomach from the muscular fibres of the extreme vessels on the surface of the body.

That the debility of the stomach, which produces vomiting in the beginning of fevers, actually depends upon an atony of the extreme vessels on the surface of the body, appears particularly from a fact observed by Dr. Sydenham. In the attack of the plague, a vomiting happens, which prevents any medicine from remaining on the stomach ; and Dr. Sydenham tells us, that in such cases he could not overcome this vomiting but by external means applied to produce a sweat ; that is, to excite the action of the vessels on the surface of the body.

The same connection between the state of the stomach, and that of the extreme vessels on the surface of the body, appears from this also, that the vomiting, which so frequently happens in the cold stage of fevers, commonly ceases upon the coming on of the hot, and very certainly upon any sweats coming out, (xiv.) It is indeed probable, that the vomiting in the cold stage of fevers, is one of the means employed by nature for restoring the determination to the surface of the body ; and it is a circumstance affording proof, both of this and of the general connection between the stomach and surface of the body, that emetics thrown into the stomach, and operating there in the time of the cold stage, commonly put an end to it, and bring on the hot stage.

It also affords a proof of the same connection, that cold water taken into the stomach produces an increase of heat on the surface of the body, and is very often a convenient and effectual means of producing sweat.

From the whole we have now said on this subject, I think it is sufficiently probable, that the symptoms of anorexia, nausea, and vomiting, depend upon, and are a proof of an atony subsisting in the extreme vessels on the surface of the body ; and that this atony therefore, now

ascertained as a matter of fact, may be considered as a principal circumstance in the proximate cause of fever.

XLV. This atony we suppose to depend upon a diminution of the energy of the brain ; and that this diminution takes place in fevers, we conclude, not only from the debility prevailing in so many of the functions of the body, mentioned above (xxxv.), but particularly from symptoms which are peculiar to the brain itself. Delirium is a frequent symptom of fever : and as from the physiology and pathology we learn that this symptom commonly depends upon some inequality in the excitement of the brain or intellectual organ ; we hence conclude, that, in fever, it denotes some diminution in the energy of the brain. Delirium, indeed, seems often to depend upon an increased impetus of the blood in the vessels of the brain, and therefore attends phrenitis. It frequently appears also in the hot stage of fevers, accompanied with a headache and throbbing of the temples. But as the impetus of the blood in the vessels of the head is often considerably increased by exercise, external heat, passions, and other causes, without occasioning any delirium ; so, supposing that the same impetus, in the case of fever, produces delirium, the reason must be, that at the same time there is some cause which diminishes the energy of the brain, and prevents a free communication between the parts concerned in the intellectual functions. Upon the same principles also, I suppose there is another species of delirium, depending more entirely on the diminished energy of the brain, and which may therefore arise when there is no unusual increase of the impetus of the blood in the vessels of the brain. Such seems to be the delirium occurring at the beginning of the cold stage of fevers, or in the hot stage of such fevers as show strong marks of debility in the whole system.

XLVI. Upon the whole, our doctrine of fever is explicitly this ; The remote causes (xxxvi.) are certain sedative powers applied to the nervous system, which diminishing the energy of the brain, thereby produce a debility in the whole of the functions (xxxv.) and

particularly in the action of the extreme vessels (XLIII. XLIV.) Such however is, at the same time, the nature of the animal economy (XXXVIII) that this debility proves an indirect stimulus to the sanguiferous system ; whence, by the intervention of the cold stage, and spasm connected with it (XXXIX. XL.) the action of the heart and larger arteries is increased (XL.) and continues so (XLI.) till it has had the effect of restoring the energy of the brain, of extending this energy to the extreme vessels, of restoring therefore their action, and thereby especially overcoming the spasm affecting them ; upon the removing of which, the excretion of sweat, and other marks of the relaxation of excretaries take place.*

* The investigation of the proximate cause of fever has ever afforded an ample scope for the display of the ingenuity of medical men. Innumerable theories have been advanced, and received as the favorite doctrines of the day, doomed in their turn to give way to others as fanciful as themselves ; and of the many volumes which have been written on this subject, scarcely any serve any other purpose than that of records of the unprofitable waste of talent, and of the vanity of hypothetical reasoning, deduced from preconceived opinion, or founded on partial induction.

This theory of fever, for which Dr. Cullen had an extreme partiality, and which he has labored with the utmost ingenuity to support, notwithstanding its general plausibility, is liable to some insurmountable objections. That the cold fit is the cause of the subsequent hot one, may be contested on the best grounds ; for they are not in proportion to each other. In quartans, the cold fit is violent and protracted, while the hot is comparatively short. In quotidians the reverse of this takes place. Indeed there are cases of fever on record where the cold stage seemed to be altogether wanting. See *Burserius*, Vol. I. The assumption of the exciting cause of fever being a sedative power applied to the body, appears equally gratuitous. It is as yet somewhat dubious, whether there is any such power in nature ; certain it is, that most of those substances, which were formerly conceived to possess a sedative quality, produce their effects in consequence of the exhaustion occasioned by the previous stimulus. And this may even apply to those whose action is so intense as immediately to extinguish life, without any apparent increased action. That debility is in general the first link of febrile action is undoubted, but the connection which it has with the subsequent phenomena, is yet unexplained. Debility, in all its degrees, is every day induced by the most opposite causes, without any fever supervening. Dr. Cullen finds considerable difficulty in accommodating the increased activity of the sanguiferous system to his hypothesis, and to extricate himself has recourse to the *vis medicatrix naturæ*, to whose superintending care, and salutary efforts, he ascribes the subsequent reaction, *dignus vindice nodus*. But this power, the admission of which (as the Doctor himself confesses) disturbs and perplexes all our reasoning on the animal economy, has never, in this sense of the word, been proved to exist ; and when introduced, only explains one difficulty by substituting a greater in its place. That the animal body possesses, to a certain extent, a power of preserving itself against noxious causes applied to it, must be admitted : Thus, accrid substances, taken into the trachea, or *præmæ viæ*, stimulate those

XLVII. This doctrine will, as I suppose, serve to explain not only the nature of fever in general, but also the various cases of it which occur. Before proceeding, however, to this, it may be proper to point out the opinions, and, as I apprehend, the mistakes which have formerly prevailed on this subject.

XLVIII. It has been supposed, that a lento or viscidity prevailing in the mass of blood, and stagnating in the extreme vessels, is the cause of the cold stage of fevers and its consequences. But there is no evidence of any such viscidity previously subsisting in the fluids; and as it is very improbable that such a state of them can be very quickly produced, so the suddenness with which paroxysms come on, renders it more likely that the phenomena depend upon some cause acting upon the nervous system, or the primary moving powers of the animal economy. See Van Swieten apud Boerh. Aph. 755.

XLIX. Another opinion, which has been almost universally received, is, that a noxious matter introduced into or generated in the body, is the proximate cause of fever; and that the increased action of the heart and arteries, which forms so great a part of the disease, is an effort of the *vis medicatrix naturæ* to expel this morbid matter, and particularly to change or concoct it, so as to

parts to an increased action, by which they are expelled: An irritating substance applied to the eye, produces an increased secretion of tears, by which it may be washed away; and these happen in conformity to acknowledged and established laws of the economy. But to suppose that substances, whose natural tendency is to diminish action, sometimes indirectly increase the activity of the system, merely because such activity may prove salutary, is to produce an effect without a cause; and by introducing the old exploded doctrine of the *anima medica*, tends to subvert all our reasoning on these subjects.

The existence of a spasmodic constriction of the extreme vessels in fever, has likewise been called in question. In the commencement of fever, the general paleness of the surface of the body may be easily ascribed to the enfeebled action of the heart and arteries, and their consequent inability to propel the blood into the extreme vessels. In the hot stage, however, where the action of the sanguiferous system is morbidly increased, the dryness of the skin, and apparent suppression of perspiration, are not so easily explained. They may however be in part, if not entirely, referred to the increased evaporation from the surface of the body, by which the perspirable matter is carried off as soon as it is excreted. The urgent thirst, likewise, would lead us to suspect that there is an increased dissipation of the fluids in fever.

PRACTICE OF PHYSIC.

render it either altogether innocent, or, at least, fit for being more easily thrown out of the body. This doctrine, however, although of as great antiquity as any of the records of physic now remaining, and although it has been received by almost every school of medicine, yet appears to me to rest upon a very uncertain foundation. There are fevers produced by cold, fear, and other causes accompanied with all the essential circumstances of fever, and terminating by sweat; but at the same time without any evidence or suspicion of morbid matter.

There have been fevers suddenly cured by a hemorrhagy, so moderate as could not carry out any considerable portion of a matter diffused over the whole mass of blood; nor can we conceive how the morbid matter could be collected or determined to pass off by such an outlet as in that case is opened.

Even supposing a morbid matter were present, there is no explanation given in what manner the concoction of it is performed; nor is it shown that any such change does in fact take place. In certain cases, it is indeed evident, that a noxious matter is introduced into the body, and proves the cause of fever: but, even in these cases, it appears that the noxious matter is thrown out again, without having suffered any change; that the fever often terminates before the matter is expelled; and that upon many occasions, without waiting the supposed time of concoction, the fever can be cured, and that by remedies which do not seem to operate upon the fluids, or to produce any evacuation.

L. While we thus reason against the notion of fever being an effort of nature, for concocting and expelling a morbid matter; I by no means intend to deny that the cause of fever frequently operates upon the fluids, and particularly produces a putrescent state of them. I acknowledge that this is frequently the case: but, at the same time, I maintain, that such a change of the fluids is not commonly the cause of fever; that very often it is an effect only; and that there is no reason to

believe the termination of the fever to depend upon the expulsion of the putrid matter.

II. Another opinion which has prevailed, remains still to be mentioned. In intermittent fevers, a great quantity of bile is commonly thrown out by vomiting ; and this is so frequently the case, that many have supposed an unusual quantity of bile, and perhaps a peculiar quality of it, to be the cause of intermittent fevers. This, however, does not appear to be well founded. Vomiting, by whatever means excited, if often repeated, with violent straining, seems to be powerful in emulgizing the biliary ducts, and commonly throws out a great deal of bile. This will happen especially in the case of intermittent fevers : For as, in the state of debility and cold stage of these fevers, the blood is not propelled in the usual quantity into the extreme vessels, and particularly into those on the surface of the body, but is accumulated in the vessels of the internal parts, and particularly in the vena portarum ; so this may occasion a more copious secretion of bile.

These considerations will, in some measure, account for the appearance of an unusual quantity of bile in intermittent fevers ; but the circumstance which chiefly occasions the appearance of bile in these cases, is the influence of warm climates and seasons. These seldom fail to produce a state of the human body, in which the bile is disposed to pass off, by its secretaries, in greater quantity than usual, and perhaps also changed in its quality, as appears from the disease of cholera, which so frequently occurs in warm seasons. At the same time, this disease occurs often without fever ; and we shall hereafter render it sufficiently probable, that intermittent fevers, for the most part, arise from another cause, that is from marsh effluvia ; while, on the other hand, there is no evidence of their arising from the state of the bile alone. The marsh effluvia, however, commonly operate most powerfully in the same season that produces the change and redundancy of the bile ; and, therefore, considering the vomiting and other circumstances of the intermittent fevers which here concern, it

is not surprising that autumnal intermittents are so often attended with effusions of bile.

This view of the subject does not lead us to consider the state of the bile as the cause of intermittents, but merely as a circumstance accidentally concurring with them, from the state of the season in which they arise. What attention this requires in the conduct of the disease, I shall consider hereafter.

LIII. From this view of the principal hypotheses which have been hitherto maintained with respect to the proximate cause of fever, it will appear, that fevers do not arise from changes in the state of the fluids ; but that, on the contrary, almost the whole of the phenomena of fevers lead us to believe that they chiefly depend upon changes in the state of the moving powers of the animal system. Though we should not be able to explain all the circumstances of the disease, it is at least of some advantage to be led into the proper train of investigation. I have attempted to pursue it, and shall now endeavor to apply the doctrine already delivered towards explaining the diversity of fevers.

C H A P. III.

OF THE DIFFERENCE OF FEVERS, AND ITS CAUSES.

LIII. To ascertain the difference of fevers, I think it necessary to observe, in the first place, that every fever of more than one day's duration consists of repeated, and in some measure separate paroxysms ; and that the difference of fevers taken notice of above (from xxv. to xxx.), appears to consist in the different state of paroxysms, and in the different circumstances of their repetition.

LIV. That fevers generally consist of distinct, and in some measure separately repeated paroxysms, I have alledged above to be a matter of fact ; but I shall here endeavor to confirm it, by assigning the cause.

LV. In every fever, in which we can distinctly observe any number of separate paroxysms, we constantly find that each paroxysm is finished in less than twenty four hours ; but as I cannot perceive any thing in the cause of fevers determining to this, I must presume it to depend on some general law of the animal economy. Such a law seems to be that which subjects the economy, in many respects, to a diurnal revolution. Whether this depends upon the original conformation of the body, or upon certain powers constantly applied to it, and inducing a habit, I cannot positively determine ; but the returns of sleep and watching, of appetites, and excretions, and the changes which regularly occur in the state of the pulse, show sufficiently, that in the human body a diurnal revolution takes place.

LVI. It is this diurnal revolution which, I suppose, determines the duration of the paroxysms of fevers ; and the constant and universal limitation of these paroxysms (as observed in LV.), while no other cause of it can be assigned, renders it sufficiently probable that their duration depends upon, and is determined by the revolution mentioned. And that these paroxysms are connected with that diurnal revolution, appears further from this, that though the intervals of paroxysms are different in different cases, yet the times of the accession of paroxysms are generally fixed to one time of the day ; so that Quotidians come on in the morning, Tertiarians at noon, and Quartans in the afternoon.

LVII. It remains to be remarked, that as Quartans and Tertiarians are apt to become Quotidians, these to pass into the state of Remittents, and these last to become Continued ; and that, even in the Continued form, daily exacerbations and remissions are generally to be observed ; so all this shows so much the power of diurnal revolution, that when, in certain cases, the daily exacerbations and remissions are with difficulty distinguished, we may still presume, that the general tendency of the economy prevails, that the disease still consists of repeated paroxysms, and, upon the whole, that there is no such disease as that which the schools have called a

Continent Fever. I expect that this doctrine will be confirmed by what I shall say hereafter concerning the periodical movements observed in continued fevers.

LVIII. It being thus proved, that every fever, of more than one day's duration, consists of repeated paroxysms, we, in the next place, remark, that the repetition of paroxysms depends upon the circumstances of the paroxysms which have already taken place. From what was observed in xxx. and xxxi. it appears, that the longer paroxysms are protracted, they are the sooner repeated; and, therefore, that the cause of the frequent repetition is to be sought for in the cause of the protraction of paroxysms.

LIX. Agreeably to what is laid down in XLVI. and to the opinion of most part of physicians, I suppose that in every fever there is a power applied to the body, which has a tendency to hurt and destroy it, and produces in it certain motions which deviate from the natural state; and, at the same time, in every fever which has its full course, I suppose, that in consequence of the constitution of the animal economy, there are certain motions excited, which have a tendency to obviate the effects of the noxious power, or to correct and remove them. Both these kinds of motion are considered as constituting the disease.

But the former is perhaps strictly the morbid state, while the latter is to be considered as the operation of the *vis medicatrix naturæ* of salutary tendency, and which I shall hereafter call the REACTION of the system.

LX. Upon the supposition that these two states take place in every paroxysm of fever, it will appear to be chiefly in the time of the hot stage that the reaction operates in removing the morbid state; and therefore, as this operation succeeds more or less quickly, the hot stage of paroxysms will be shorter or longer. But as the length of paroxysm depends chiefly upon the duration of the hot stage, so the longer duration of this and of paroxysms, must be owing either to the obstinacy of resistance in the morbid state, or to the weakness of the salutary reaction; and it is probable that sometimes the

one and sometimes the other of these circumstances takes place.

LXI. It seems to be only by the state of the spasm, that we can judge of the resistance of the morbid state of fever: and with respect to this spasm I observe, that either the cause exciting it may be different in different cases; or, though the cause should be the same in different persons, the different degree of irritability in each may give occasion to a greater or lesser degree of spasm; and thereafter, the reaction in fever being given, the continuance of the hot stage, and of the whole paroxysm, may be longer or shorter, according to the degree of spasm that has been formed.

LXII. One cause of the obstinacy of spasm in fevers may be clearly perceived. In inflammatory diseases, there is a diathesis phlogistica prevailing in the body, and this diathesis we suppose to consist in an increased tone of the whole arterial system. When, therefore, this diathesis accompanies fever, as it sometimes does, it may be supposed to give occasion to the febrile spasms being formed more strongly, and thereby to produce more protracted paroxysms. Accordingly we find that all inflammatory fevers are of the continued kind; and that all the causes of the diathesis phlogistica have a tendency to change intermittent into continued fevers. Continued fevers, then, being often attended with the diathesis phlogistica, we conclude, that in many cases this is the cause of their continued form.

LXIII. In many fevers, however, there is no evidence of any diathesis phlogistica being present, nor of any other cause of more considerable spasm; and, in such cases, therefore, we must impute the protraction of paroxysms, and the continued form of the fever, to the weakness of reaction. That this cause takes place, we conclude from hence, that, in many cases of fever, wherein the separate paroxysms are the longest protracted, and the most difficulty observed, we find the most considerable symptoms of a general debility; and therefore we infer, that in such cases, the protracted paroxysms, and continued form, depend upon a weaker reaction; ou-

ing either to the causes of debility applied, having been of a more powerful kind, or from circumstances of the patient's constitution favouring their operation.

LXIV. Upon these principles we make a step towards explaining in general, with some probability, the difference of fevers; but must own that there is much doubt and difficulty in applying the doctrine to particular cases. It applies tolerably well to explain the different states of intermittents, as they are more purely such, or as they approach more and more to the continued form: But several difficulties still remain with respect to many circumstances of intermittents; and more still with respect to the difference of those continued fevers, which we have distinguished in our NOSOLOGY as different from intermittents, and as more especially entitled to the appellation of Continued, (see Syn. Nos. Meth. P. V. Ch. I. Sect. II.) and explained more fully above.

LXV. From the view given (LXIII. and LXIV.) of the causes of the protraction of paroxysms and therefore of the form of continued fevers, strictly so called, it seems probable, that the remote causes of these operate by occasioning either a phlogistic diathesis, or a weaker reaction; for we can observe, that the most obvious difference of continued fevers depends upon the prevalence of one or other of these states.

LXVI. Continued fevers have been accounted of great diversity; but physicians have not been successful in marking these differences, or in reducing them to any general heads. The distinctions made by the ancients are not well understood; and, so far as either they or the modern nosologists have distinguished continued fevers by a difference of duration, their distinctions are not well founded, and do not apply in such a manner as to be of any use. We think it agreeable to observation, and to the principles above laid down (LXIII. LXIV.) to distinguish continued fevers according as they show either in inflammatory irritation, or a weaker reaction.

LXVII. This distinction is the same with that of fevers into the INFLAMMATORY and NERVOUS; the distinction at present most generally received in Britain. To this

first, as a genus, I have given the name of Synocha ; to the second, that of Typhus ; and little studious whether these names be authorised by the ancient use of the same terms, I depend upon their being understood by the characters annexed to them in our Nosology, which I apprehend to be founded on observation.

LXVIII. By these characters I think continued fever, may in practice be distinguished ; and, if that be the case, the principles above laid down will be confirmed.

LXIX. Beside these differences of continued fever, now mentioned, I am not certain of having observed any other that can be considered as fundamental. But the most common form of continued fever, in this climate, seems to be a combination of these two genera ; and I have therefore given such a genus a place in our Nosology, under the title of Synochus. At the same time, I think that the limits between the Synochus and Typhus will be with difficulty assigned ; and I am disposed to believe, that the Synochus arises from the same causes as the Typhus, and is therefore only a variety of it.

LXX. The Typhus seems to be a genus comprehending several species. These, however, are not yet well ascertained by observation ; and in the mean time we can perceive that many of the different cases observed do not imply any specific difference, but seem to be merely varieties, arising from a different degree of power in the cause, from different circumstances of the climate or season in which they happen, or from different circumstances in the constitution of the persons affected.

LXXI. Some of the effects arising from these circumstances, require to be particularly explained.

One is, an unusual quantity of bile appearing in the course of the disease. This abundance of bile may possibly attend some continued fevers, strictly so called ; but, for the reasons above explained, it more commonly attends intermittents, and, we believe, it might have been enumerated (xxix.) among the marks distinguishing the latter kind of fevers from the former. But, though an unusual quantity of bile should appear with continued fevers, it is considered in this case, as in that of intermit-

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tents, to be a coincidence only, owing to the state of the season, and producing no different species or fundamental distinction, but merely a variety of the disease. I think it proper to observe here, that it is probable that the most part of the continued fevers named Bilious, have been truly such as belong to the section of Intermittents.

LXXII. Another effect of the circumstances occasionally varying the appearance of typhus, is a putrescent state of the fluids. The ancients, and likewise the moderns, who are in general much disposed to follow the former, have distinguished fevers, as putrid and non-putrid : but the notions of the ancients, on this subject, were not sufficiently correct to deserve much notice; and it is only of late that the matter has been more accurately observed, and better explained.

From the dissolved state of the blood, as it presents itself when drawn out of the veins, or as it appears from the red blood being disposed to be effused, and run off by various outlets, and from several other symptoms, to be hereafter mentioned, I have now no doubt, how much soever it has been disputed by some ingenious men, that a putrescency of the fluids, to a certain degree, does really take place in many cases of fever. This putrescency, however, often attends intermittent, as well as continued fevers, and, of the continued kind, both the synochus and typhus, and all of them in very different degrees ; so that, whatever attention it may deserve in practice, there is no fixing such limits to it as to admit of establishing a species under the title of PUTRID.

LXXIII. Beside differing by the circumstances already mentioned, fevers differ also by their being accompanied with symptoms which belong to diseases of the other orders of pyrexiae. This sometimes happens in such a manner as to render it difficult to determine which of the two is the primary disease. Commonly, however, it may be ascertained by the knowledge of the remote cause, and of the prevailing epidemic, or by observing the series and succession of symptoms.

LXXIV. Most of our systems of physic have marked, as a primary one, a species of fever under the title of ILLITICIE ; but, as it is described, I have never seen it as a primary disease. I have constantly found it as a symptom of some topical affection, most commonly of an internal suppuration ; and as such it shall be considered in another place.

LXXV. The distinction of the several cases of intermittent fever I have not prosecuted here ; both because we cannot assign the causes of the differences which appear, and because I apprehend, that the differences which in fact occur, may be readily understood from what is said above (xxv. xxvi. and xxvii.), and more fully from our Methodical Nosology, Ch. I Sect. I.

C H A P. IV.

OF THE REMOTE CAUSES OF FEVER.

LXXVI. AS fever has been held to consist chiefly in an increased action of the heart and arteries, physicians have supposed its remote causes to be certain direct stimulants fitted to produce this increased action. In many cases, however, there is no evidence of such stimulants being applied ; and in those in which they are applied, they either produce only a temporary frequency of the pulse, which cannot be considered as a disease ; or if they do produce a permanent febrile state, it is by the interversion of a topical inflammation which produces a disease different from what is strictly called fever. (viii.)

LXXVII. That direct stimulants are the remote causes of fever, seems farther improbable, because the supposition does not account for the phenomena attending the accession of fevers ; and because other remote causes can with greater certainty be assigned.

LXXVIII. As fevers are so generally epidemic, it is probable that some matter floating in the atmosphere, and applied to the bodies of men, ought to be consider-

ed as the remote cause of fevers : and these matters present in the atmosphere, and thus acting upon men, may be considered either as **CONTAGIONS**, that is effluvia arising directly or originally from the body of a man under a particular disease, and exciting the same kind of disease in the body of the person to whom they are applied ; or **MIASMATA**, that is effluvia arising from other substances than the bodies of men, producing a disease in the person to whom they are applied.

LXXIX. Contagions have been supposed to be of great variety ; and it is possible this may be the case ; but that they truly are so, does not appear clearly from any thing we know at present. The genera and species of contagious diseases, of the class of **Pyrexiae**, at present known, are in number not very great. They chiefly belong to the order of Fevers, to that of Exanthemata, or that of Profluvia. Whether there be any belonging to the order of Phlegmasiae, is doubtful ; and though there should, it will not much increase the number of contagious pyrexiae. Of the contagious exanthemata and profluvia, the number of species is nearly ascertained ; and each of them is so far of a determined nature, that though they have now been observed and distinguished for many ages, and in many different parts of the world, they have been always found to retain the same general character, and to differ only in circumstances, that may be imputed to season, climate, and other external causes, or to the peculiar constitutions of the several persons affected. It seems therefore probable, that in each of these species the contagion is of one specific nature ; and that the number of contagious exanthemata or profluvia, is hardly greater than the number of species enumerated in the systems of pathology.

LXXX. If, while the contagious exanthemata and profluvia are thus limited, we should suppose the contagious pyrexiae to be still of great and unlimited variety, it must be with respect to the genera and species of continued fevers. But if I be right in limiting, as I have done, the genera of these fevers (LXVII.—LXX.), it will appear likely that the contagions which produce them

are not of great variety and this will be much confirmed, if we can render it probable that there is one principal, perhaps one common source of such contagions.

LXXXI. To this purpose, it is now well known, that the effluvia constantly arising from the living human body, if long retained in the same place, without being diffused in the atmosphere, acquire a singular virulence; and in that state being applied to the bodies of men, become the cause of a fever, which is highly contagious.

The existence of such a cause is fully proved by the late observations on jail and hospital fevers; and that the same virulent matter may be produced in many other places, must be sufficiently obvious: and it is probable that the contagion arising in this manner is not, like many other contagions, permanent and constantly existing, but that, in the circumstances mentioned, it is occasionally generated. At the same time, the nature of the fevers from thence, upon different occasions, arising, renders it probable that the virulent state of human effluvia is the common cause of them, as they differ only in a state of their symptoms; which may be imputed to the circumstances of season, climate, &c. concurring with the contagion, and modifying its force.

LXXXII. With respect to these contagions, though we have spoken of them as of a matter floating in the atmosphere, it is proper to observe that they are never found to act but when they are near to the sources from whence they arise; that is, either near to the bodies of men, from which they immediately issue; or near to some substances which, as having been near to the bodies of men, are imbued with their effluvia, and in which substances these effluvia are sometimes retained in an active state for a very long time.

These substances thus imbued with an active and infectious matter, may be called *Fomites*; and it appears to me probable, that contagions, as they arise from fomites, are more powerful than as they arise immediately from the human body.

LXXXIII. Miasmata are next to be considered. These may arise from various sources, and be of different kinds; but we know little of their variety, or of their several

effects. We know with certainty only one species of miasma, which can be considered as the cause of fever; and, from the universality of this, it may be doubted if there be any other.

LXXXIV. The miasma, so universally the cause of fever, is that which arises from marshes or moist ground, acted upon by heat. So many observations have now been made with respect to this, in so many different regions of the earth, that there is neither any doubt of its being in general a cause of fevers, nor of its being very universally the cause of intermittent fevers, in all their different forms. The similarity of the climate, season, and soil, in the different countries in which intermittents arise, and the similarity of the diseases, though arising in different regions, concur in proving that there is one common cause of these diseases, and that this is the marsh miasma*.

What is the particular nature of this miasma, we know not; nor do we certainly know whether or not it differs in kind: but it is probable that it does not; and that it varies only in the degree of its power, or perhaps as to its quantity, in a given space.

LXXXV. It has been now rendered probable, that the remote causes of fevers (viii.) are chiefly Contagions or Miasmata, and neither of them of great variety. We have supposed that miasmata are the cause of intermit-

*About the middle of the 17th century, Lancisi first traced the origin of intermittent fevers to marsh miasmata; and this is now so generally admitted, that it is perfectly unnecessary to say any thing in its confirmation. About the nature of this miasma, much diversity of opinion has prevailed; and the investigations of many ingenious men on this subject have been attended with little success. The discovery of the different gaseous fluids, for which we are indebted to modern chemistry, has given rise to many interesting speculations, and enabled us to subject the air in different places to a stricter analysis, and to ascertain, with more precision, the cause of its purity or vitiation. Inflammable air, or hydrogen gas, which issues abundantly from marshy situations, was formerly supposed to be the cause of intermittents; but the experiments of De Rosier, Beddoes, and Davy, in which this air was breathed with impunity, show the fallacy of this observation. The other aeriform fluids, which have been detected in marshy places, are, from their known properties, proved inadequate to produce this effect. M. Vanbreda has ascertained that the oxygen in the atmosphere of marshes bears a less proportion to the azote than usual; but this if it produced any effect, should diminish instead of increasing the activity of the vessels. This cause is likewise, in other respects, incompatible with the phenomena of the disease.

tents, and contagions the cause of continued fevers, strictly so named; but we cannot with propriety employ these general terms : For as the cause of continued fevers may arise from somites, and may, in such cases, be called a Miasma ; and as other miasmata also may produce contagious diseases, it will be proper to distinguish the causes of fevers, by using the terms *Human* or *Marsh Effluvia*, rather than the general ones of Contagion or Miasma.

LXXXVI. To render our doctrine of fever consistent and complete, it is necessary to add here, that those remote causes of fever, human and marsh effluvia, seem to be of a debilitating or sedative quality. They arise from a putrescent matter. Their production is favored, and their power increased, by circumstances which favor putrefaction ; and they often prove putrefactive ferments with respect to the animal fluids. As putrid matter, therefore, is always, with respect to animal bodies a powerful sedative, so it can hardly be doubted that human and marsh effluvia are of the same quality ; and it is confirmed by this, that the debility which is always induced, seems to be in proportion to the other marks that appear of the power of those causes.

LXXXVII. Though we have endeavored to show that fevers generally arise from marsh or human effluvia, we cannot, with any certainty, exclude some other remote causes, which are commonly supposed to have at least a share in producing those diseases. And I proceed, therefore, to inquire concerning these causes ; the first of which that merits attention is the power of cold applied to the human body.

LXXXVIII. The operation of cold on a living body is so different in different circumstances, as to be of difficult explanation ; it is here, therefore, attempted with some diffidence.

The power of cold may be considered as absolute or relative.

The *absolute* power is that by which it can diminish the temperature of the body to which it is applied. And thus, if the natural temperature of the human

body is, as we suppose it to be, that of 98 degrees of Fahrenheit's thermometer *, every degree of temperature less than that, may be considered as cold with respect to the human body ; and, in proportion to its degree, will have a tendency to diminish the temperature of the body. But as the living human body has in itself a power of generating heat †, so it can sustain its own proper heat

* In every instance of our mentioning degrees of heat or cold, we shall mention them by the degrees in Fahrenheit's scale ; and the expression of higher or lower shall always be according to that scale.

† As the nature of this power, by which animals preserve their temperature higher than that of the surrounding medium, was very imperfectly understood at the time Dr. Cullen wrote, it will not be improper to mention briefly the recent discoveries relating to it. Besides being intimately connected with some of the most important doctrines in physiology and pathology, they illustrate the subsequent remarks on cold, and deserve serious attention on account of their application in many diseases. It had been long observed that the temperature of animals seemed to be in a great measure proportioned to the perfection of their respiratory organs ; It had been likewise observed that the blood, in its circulation through the lungs, undergoes a remarkable change : From the dark venous hue which it possesses as it is returning to the right auricle, it assumes, in its passage through the lungs, a florid arterial color. This was considered as indicating some corresponding change of the blood. Dr. Black proved that the air expired from the lungs contained carbonic acid, as it rendered lime water turbid. He likewise observed that the process of respiration seemed in some respects to resemble combustion. The experiments of Lavoisier having ascertained the composition of atmospheric air, were applied to this function, and it was found that in respiration a quantity of oxygen disappeared, and that carbonic acid supplied its place. As, however, it has not yet been proved whether the carbon existing in the blood is pure, or an oxyd of that substance, we cannot estimate accurately the quantity of oxygen that is employed in the formation of the acid ; and some have supposed that the carbonic acid expired, previously existed in the blood. But this opinion, independent of other considerations, is refuted by the experiments of Mr. Davy, in which, when hydrogen gas was frequently inspired, little carbonic acid was formed. There is likewise a quantity of watery vapour expired, which was supposed to arise from the direct union of the oxygen of the atmosphere with the hydrogen of the blood ; but is with far greater probability referred to evaporation from the extensive and moist surface of the bronchiæ, where so many circumstances favor its production.

It has then been ascertained, that of the oxygen which disappears, part is expended in the formation of carbonic acid, and part absorbed into the blood, to which it imparts a florid color, and restores the power of stimulating the heart and arteries, whose contractions become languid, and in a short time altogether cease, if the supply of this principle is interrupted.

The generation of animal heat depends chiefly on these changes. We are indebted to Dr. Black for the important discovery, that different bodies, at equal temperatures, contain unequal quantities of caloric, which is neither proportioned to their volume, or quantities of matter : or that, besides the caloric which affects their temperature, they contain different quantities in a latent state not sensible to the thermometer ; in other words, they have different capacities for caloric. Dr. Crawford, in his masterly and elaborate Treatise on Animal Heat, has not only ascertained this difference of

to the degree above mentioned, though surrounded by air or other bodies of a lower temperature than itself; and it appears from observation, that in this climate, air, or other bodies, applied to the living man, do not diminish the temperature of his body, unless the temperature of the bodies applied be below 62 degrees. From hence it appears, that the absolute power of cold in this climate, does not act upon the living human body, unless the cold applied be below the degree just now mentioned.

It appears also, that the human body's being surrounded by air of a lower temperature than itself, is necessary to its being retained in its proper temperature of 98 degrees: for, in this climate, every temperature of the air above 62 degrees, applied to the human body, though still of a lower temperature than itself, is found to increase the heat of it*. And from all this it appears, that the absolute power of cold with respect to

capacity, but ingeniously applied it to the explanation of animal temperature, and proved, from the superior capacity of oxygen to carbonic acid, that when the former unites with carbon, there must be an evolution of caloric. As, however, the capacity of the arterial blood is greater than that of the venous, this caloric is rendered latent, and becomes sensible in the course of the circulation, as the blood is converting into venous, and its capacity diminishing. That this is the chief cause of animal temperature, is further confirmed by Dr. Crawford, who found that much about the same quantity of heat is generated from the consumption of a given quantity of oxygen by respiration, as is produced by burning the same quantity of that gas with carbonaceous matter. This fact is corroborated by the experiments of Lavoisier.

The erroneous opinion of Dr. Crawford respecting the origin of the hydro carbon by the addition of which, he conceived that the arterial blood was converted into venous, does not in the smallest degree affect the above theory.

* This observation, that every temperature above 62° is found to increase the heat of the body, is incorrect, and arises from taking the sensation of heat produced at the surface of the body as a general standard of its increase of temperature.

In heated air there is not only less oxygen in a given volume, but the attraction of the blood, for it is diminished. Hence, in a given time, an animal vitiates a less quantity of air in a heated than in a cold medium.

That the living body possesses a power of resisting increase of temperature, is proved by the experiments of Dr. Fordyce, who remained for 15 minutes in air saturated with moisture, and heated to 130°, the heat of the body being very little raised above the natural standard. As his whole body was covered with moisture from the condensation of vapor, it is obvious that the cold produced by evaporation could not contribute to this effect.

the human body, is very different from what it is with respect to inanimate bodies.

LXXXIX. The *relative* power of cold with respect to the living human body, is that power by which it produces a sensation of cold in it ; and with respect to this, it is agreeable to the general principle of sensation, that the sensation produced is not in proportion to the absolute force of impression, but according as the new impression is stronger or weaker than that which had been applied immediately before. Accordingly, with respect to temperature, the sensation produced by any degree of this, depends upon the temperature to which the body had been immediately before exposed ; so that whatever is higher than this feels warm, and whatever is lower than it feels cold ; and it will therefore happen that the opposite sensations of heat and cold may on different occasions arise from the same temperature, as marked by the thermometer.

With respect to this, however, it is to be observed, that though every change of temperature gives a sensation of cold or heat, as it is lower or higher than the temperature applied immediately before, the sensation produced is, in different cases, of different duration. If the temperature at any time applied is under 62 degrees, every increase of temperature applied will give a sensation of heat ; but if the increase of temperature does not arise to 62 degrees, the sensation produced will not continue long, but be soon changed to a sensation of cold. In like manner, any temperature, applied to the human body, lower than that of the body itself, gives a sensation of cold ; but if the temperature applied does not go below 62 degrees, the sensation of cold will not continue long, but be soon changed to a sensation of heat.

It will appear hereafter that the effects of the sensation of cold will be very different, according as it is more permanent or transitory.

Xc. Having thus explained the operation of cold, as absolute or relative with respect to the human body, I proceed to mention the general effects of cold upon it.

1. Cold, in certain circumstances, has manifestly a *sedative* power. It can extinguish the vital principle entirely, either in particular parts, or in the whole body ; and considering how much the vital principle of animals depends upon heat; it cannot be doubted that the power of cold is always more or less directly sedative.

This effect may be said to take place from every degree of absolute cold ; and when the heat of the body has upon any occasion been preternaturally increased, every lower temperature may be useful in diminishing the activity of the system ; but it cannot diminish the natural vigor of the vital principle, till the cold applied is under 62 degrees ; nor even then will it have this effect, unless the cold applied be of an intense degree, or be applied for some length of time to a large portion of the body.

2. It is equally manifest, that in certain circumstances cold proves a *stimulus* to the living body, and particularly to the sanguiferous system.

It is probable that this effect takes place in every case in which the temperature applied produces a sensation of cold ; and this, therefore, as depending entirely on the relative power of cold, will be in proportion to the change of temperature that takes place.

It appears to me probable, that every change of temperature from a higher to a lower degree, will prove more or less stimulant, excepting when the cold applied is so intense, as immediately to extinguish the vital principle in the part.

3. Beside the sedative and stimulant powers of cold, it is manifestly also a powerful *astringent*, causing a contraction of the vessels on the surface of the body, and thereby producing a paleness of the skin, and a suppression of perspiration ; and it seems to have similar effects when applied to internal parts. It is likewise probable, that this constriction, as it takes place especially in consequence of the sensibility of the parts to which the cold is applied, will in some measure be communicated to other parts of the body ; and that thereby the application of cold proves a *tonic* power with respect to the whole system.

These effects of tonic and astringent power seem to take place both from the absolute and relative power of cold : and therefore every application of it which gives a sensation of cold, is, in its first effect, both astringent and stimulant, though the former may be often prevented from being either considerable or permanent when the latter immediately takes place*.

xci. It will be obvious that these several effects of cold cannot all take place at the same time, but may in succession be variously combined. The stimulant power taking place obviates the effects, at least the permanency of the effects, that might otherwise have arisen from the sedative power. That the same stimulant power prevents these from the astringent, I have said above ; but the stimulant and tonic powers of cold are commonly, perhaps always conjoined.

xcii. These general effects of cold, now pointed out, are sometimes salutary, frequently morbid ; but it is the latter only I am to consider here, and they seem to be chiefly the following :

1. A general inflammatory disposition of the system, which is commonly accompanied with Rheumatism or other Plegmasiae.
2. The same inflammatory disposition accompanied with Catarrh.
3. A Gangrene of particular parts.
4. A Palsey of a single member.
5. A Fever, or Fever strictly so called (viii.) which it often produces by its own power alone, but more commonly it is only an exciting cause of fever by concurring with the operation of human or marsh effluvia.

* All the attempts which have been hitherto made to account for the operation of cold, have been unsuccessful. This opinion of Dr. Cullen, though somewhat obscure, is certainly not so contradictory, as some, too much biased by late doctrines, have imagined. The unwarrantable simplification of the laws of the animal economy, which is too much the prevailing spirit of the day, has contributed little to the advancement of medical science ; and the supposing the effects of cold to arise merely from the abstraction of the stimulus of heat, is repugnant to some palpable facts. The shock which its sudden application gives to the nervous system, is often highly stimulant. In short, its operation is so different in different states of the body, that our author is certainly justified in concluding that its effects are sometimes sedative, and at other times stimulant.

xciii. Cold is often applied to the human body without producing any of these morbid effects, and it is difficult to determine in what circumstances it especially operates in producing them. It appears to me, that the morbid effects of cold depend partly upon certain circumstances of the cold itself, and partly on certain circumstances of the person to whom it is applied.

xciv. The circumstances of the cold applied which seem to give it effect, are, 1. The intensity or degree of the cold; 2. The length of time during which it is applied; 3. The degree of moisture at the same time accompanying it; 4. Its being applied by a wind or current of air; 5. Its being a vicissitude, or sudden and considerable change of temperature, from heat to cold.

xcv. The circumstances of persons rendering them more liable to be affected by cold, seem to be, 1. The weakness of the system, and particularly the lessened vigor of the circulation, occasioned by fasting, by evacuations, by fatigue, by a last night's debauch, by excess in venery, by long watching, by much study, by rest immediately after great exercise, by sleep, and by preceding disease. 2. The body, or its parts, being deprived of their accustomed coverings. 3. One part of the body being exposed to cold, while the rest is kept in its usual, or a greater warmth.

xcvi. The power of these circumstances (xcv.) is demonstrated by the circumstances enabling persons to resist cold. These are a certain vigor of constitution, exercise of the body, the presence of active passions, and the use of cordials.

Beside these, there are other circumstances which, by a different operation, enable persons to resist cold acting as a sensation; such as, passions engaging a close attention to one object, the use of narcotics, and that state of the body in which sensibility is greatly diminished, as in maniacs. To all which is to be added, the power of habit with respect to those parts of the body to which cold is more constantly applied, which both diminishes sensibility, and increases the power of the activity generating heat.

xcvii. Beside cold, there are other powers that seem to be remote causes of fever; such as, fear, intemperance in drinking, excess in venery, and other circumstances, which evidently weaken the system. But whether any of these sedative powers be alone the remote cause of fever, or if they only operate either as concurring with the operation of marsh or human effluvia, or as giving an opportunity to the operation of cold, are questions not to be positively answered: they may possibly of themselves produce fever, but most frequently they operate as concurring in one or other of the ways above mentioned.

xcviii. Having now mentioned the chief of the remote causes of fevers, it may be further observed, that these will arise more or less readily, according as miasmata and contagions are more or less prevailing and powerful or as these are more or less favored by the concurrence of cold and other sedative powers.

C H A P. V.

OF THE PROGNOSIS OF FEVERS.

xcix. As fevers (by lx.) consist of both morbid and salutary motions and symptoms, the tendency of the disease to a happy or fatal issue, or the prognostic in fevers, has been established by marking the prevalence of the morbid or of the salutary symptoms; and it might be properly so established, if we could certainly distinguish between the one and the other of these kinds of symptoms: but the operation of the reaction, or salutary efforts of nature in curing fevers, is still involved in so much obscurity, that I cannot explain the several symptoms of it so clearly as to apply them to the establishing prognostics; and this, I think, may be done better, by marking the morbid symptoms which show the tendency to death in fevers.

c. This plan of the prognostics in fevers must proceed upon our knowledge of the causes of death in general, and in fevers more particularly.

The causes of death in general are either direct or indirect.

. The first are those which directly attack and destroy the vital principle, as lodged in the nervous system, or destroy the organization of the brain immediately necessary to the action of that principle.

The second, or indirect causes of death, are those which interrupt such functions as are necessary to the circulation of the blood, and thereby necessary to the due continuance and support of the vital principle.

cl. Of these general causes, those which operate more particularly in fevers seem to be, *first*, The violence of reaction, which, either by repeated violent excitements, destroys the vital power itself, or by its violence destroys the organization of the brain necessary to the action of that power, or, by the same violence, destroys the organization of the parts more immediately necessary to the circulation of the blood.

Secondly, The cause of death in fevers may be a poison, that is, a power capable of destroying the vital principle ; and this poison may be either the miasma or contagion, which was the remote cause of the fever, or it may be a putrid matter generated in the course of the fever. In both cases, the operation of such a power appears either as acting chiefly on the nervous system, inducing the symptoms of debility, or as acting upon the fluids of the body, inducing a putrescent state in them.

cll. From all this it appears, that the symptoms showing the tendency to death in fevers, may be discovered by their being either the symptoms

OF violent reaction;

OF great debility;

Or, of a strong tendency to putrefaction in the fluids

And, upon this supposition, I proceed now to mark those symptoms more particularly.

ciii. The symptoms which denote the *violence of reaction*, are 1. The increased force, hardness, and frequency of the pulse: 2. The increased heat of the body: 3. The symptoms which are the marks of a general inflammatory diathesis, and more especially of a particular determination to the brain, lungs, or other important viscera: 4. The symptoms which are the marks of the cause of violent reaction, that is, of a strong stimulus applied, or of a strong spasm formed, the latter appearing in a considerable suppression of the excretions.

civ. The symptoms which denote *a great degree of debility*, are,

In the ANIMAL FUNCTIONS : I. The weakness of the voluntary motions; II. The irregularity of the voluntary motions, depending on their debility; III. The weakness of sensation; IV. The weakness and irregularity of the intellectual operations.

In the VITAL FUNCTIONS : I. the weakness of the pulse; II. The coldness or shrinking of the extremities; III. The tendency to a *deliquium animi* in an erect posture; IV. The weakness of respiration.

In the NATURAL FUNCTIONS : I. The weakness of the stomach, as appearing in anorexia, nausea, and vomiting; II. Involuntary excretions, depending upon a palsy of the sphincters; III. Difficult deglutition, depending upon a palsy of the muscles of the fauces.

civ. *Lastly*, The symptoms denoting the putrefactive state of the fluids, are

I. With respect to the stomach; the loathing of animal food, nausea and vomiting, great thirst, and a desire of acids:

II. With respect to the fluids; 1. The blood drawn out of the veins not coagulating as usual; 2. Hemorrhagy from different parts, without marks of increased impetus; 3. Effusions under the skin or cuticle, forming petechiae, maculae, and vibices; 4. Effusions, of a yellow serum under the cuticle.

III. With respect to the state of the excretions; fetid breath, frequent loose and fetid stools, high colored tur-

bid urine, fetid sweats, and the fetor and livid color of blistered places.

IV. The cadaverous smell of the whole body.

cvi. These several symptoms have very often, each of them singly, a share in determining the prognostic : but more especially by their concurrence and combination with one another ; particularly those of debility with those of putrescency.

cvii. On the subject of the prognostic, it is proper to observe, that many physicians have been of opinion there is something in the nature of fevers which generally determines them to be of a certain duration ; and therefore that their terminations, whether salutary or fatal, happen at certain periods of the disease, rather than at others. These periods are called the CRITICAL DAYS ; carefully marked by Hippocrates and other ancient physicians, as well as by many moderns of the greatest eminence in practice ; whilst, at the same time, many other moderns, of no inconsiderable authority, deny their taking place in the fevers of these northern regions which we inhabit.

cviii. I am of opinion that the doctrine of the ancients, and particularly that of Hippocrates, on this subject, was well founded ; and that it is applicable to the fevers of our climate.

cix. I am of this opinion, *first*, Because I observe that the animal economy, both from its own constitution, and from habits which are easily produced in it, is readily subjected to periodical movements. *Secondly*, Because, in the diseases of the human body, I observe periodical movements to take place with great constancy and exactness ; as in the case of intermittent fevers, and many other diseases.

cx. These considerations render it probable, that exact periodical movements may take place in continued fevers ; and I think there is evidence of such movements actually taking place.

cxi. The critical days, or those on which we suppose the termination of continued fevers especially to happen, are, the *third, fifth, seventh, ninth, eleventh, fourteenth,*

seventeenth and twentieth. We mark none beyond this last ; because, though fevers are sometimes protracted beyond this period, it is however more rarely ; so that there are not a sufficient number of observations to ascertain the course of them ; and further, because it is probable, that in fevers long protracted, the movements become less exact and regular, and therefore less easily observed.

CXII. That the days now mentioned are the critical days, seems to be proved by the particular facts which are found in the writings of Hippocrates. From these facts, as collected from the several writings of that author by *M. de Haen*, it appears, that of one hundred and sixty three instances of the termination of fevers, which happened on one or the other of the first twenty days of the disease, there are one hundred and seven, or more than two thirds of the whole number which happened on one or other of the eight days above mentioned ; that none happened on the second or thirteenth day ; and upon the eighth, tenth, twelfth, fifteenth, sixteenth, eighteenth, and nineteenth, there are but eighteen instances of termination, or one ninth of the whole.

CXIII. As the terminations which happen on the seven days last mentioned, are, upon the whole, few, and, upon any one of them, fewer than those which happen on any of our supposed critical days ; so there are therefore nine days which may be called NON CRITICAL : while, on the other hand, the many terminations which happened on the seventh, fourteenth, and twentieth days, afford a proof both of critical days in general, and that these are the chief of them. Hereafter I shall mention an analogy that renders the power of the other critical days sufficiently probable.

CXIV. It appears further, that as, of the terminations which were final and salutary, not a tenth part happened on the non critical days ; and of the terminations which were final and fatal, though the greater number happened on the critical days, yet above a third of them happened on the non critical ; so it would appear, that the tendency of the animal economy is to observe the critical days, and that it is by the operation of some vi-

violent and irregular cause that the course of things is sometimes turned to the non critical.

cixv. What has been said gives sufficient ground for presuming, that it is the general tendency of the animal economy to determine the periodical movements in fevers to be chiefly on the critical days. At the same time, we must acknowledge it to be a general tendency only ; and that, in particular cases, many circumstances may occur to disturb the regular course of it. Thus, though the chief and more remarkable exacerbations in continued fevers happen on the critical days, there are truly exacerbations happening every day ; and these, from certain causes, may become considerable and critical. Further, though intermittent fevers are certainly very strongly determined to observe a tertian or quartan period, we know there are circumstances which prevent them from observing these periods exactly, and which render them either anticipating or postponing so much, that the days of paroxysms come to be quite changed ; and it is allowable to suppose, that the like may happen with respect to the exacerbations of continued fevers, so as thereby to disturb the regular appearance of critical days.

A particular instance of this occurs with respect to the sixth day of fevers. In the writings of Hippocrates, there are many instances of terminations happening on the sixth day ; but it is not therefore reckoned among the critical days : for, of the terminations happening on that day, there is not one which proves finally of a fatal kind ; the greater number are fatal ; and all the rest are imperfect, and followed with a relapse. All this shows, that some violent cause had, in these cases, produced a deviation from the ordinary course of nature ; that the terminations on the sixth day are nothing more than anticipations of the seventh, and therefore a proof of the power of this last.

cixvi. The doctrine of critical days has been much embarrassed by some dissonant accounts of it, which appear in the writings imputed to Hippocrates. But this may be justly accounted for from these writings

being truly the works of different persons, and from the most genuine of them having suffered many corruptions ; so that, in short, every thing which is inconsistent with the facts above laid down, may be ascribed to one or other of these causes.

CXVII. This, further, has especially disturbed the doctrine of critical days, that Hippocrates himself attempted, perhaps too hastily, to establish general rules, and to bring the doctrine to a general theory, drawn from Pythagorean opinions concerning the power of numbers. It is this which seems to have produced the idea of odd days, and of a quaternary and septenary period, doctrines which appear so often in the writings of Hippocrates. These, however, are inconsistent with the facts above laid down ; and indeed, as Asclepiades and Celsus have observed, are inconsistent with one another.

CXVIII. Upon the whole, therefore, it is apprehended, that the critical days above assigned are truly the critical days of Hippocrates, and may be consistently explained in the following manner :

CXIX. From the universality of tertian or quartan periods in intermittent fevers, we cannot doubt of their being, in the animal economy, a tendency to observe such periods ; and the critical days above mentioned are consistent with this tendency of the economy, as all of them mark either tertian or quartan periods. These periods, however, are not promiscuously mixed, but occupy constantly their several portions in the progress of the disease ; so that, from the beginning to the eleventh day, a tertian period takes place ; and, from the eleventh to the twentieth, and perhaps longer, a quartan period is as steadily observed.

CXX. What determines the periods to be changed about the eleventh day, we have not clearly perceived ; but the fact is certain ; for there is no instance of any termination on the thirteenth, that is, the tertian period next following the eleventh ; whereas, upon the fourteenth, seventeenth, and twentieth, which mark quartan periods, there are forty three instances of ter-

minations, and fix only on all the intermediate days between these.

This prevalence of a quartan period leaves no room for doubting that the twentieth, and not the twenty-first, is the critical day marked by Hippocrates, though the last is mentioned as such in the common edition of the Aphorisms, taken from an erroneous manuscript, which Celsus also seems to have copied.

cxxi. A consistency with the general tendency of the system, renders the series of critical days we have mentioned, probably the true one ; and the only remaining difficulty in finding what we have delivered to be the same with the genuine doctrine of Hippocrates, is the frequent mention of the fourth as a critical day.

It is true there are more instances of terminations happening on this day than on some of those days we have asserted to be truly critical : but its inconsistency with the more general tendency, and some other considerations, lead us to deny its being naturally a critical day ; and to think that the instances of terminations, which have really occurred on the fourth day, are to be reckoned among the other irregularities that happen in this matter.

cxxii. I have thus endeavored to support the doctrine of critical days chiefly upon the particular facts to be found in the writings of Hippocrates ; and although I might also produce many other testimonies of both ancient and modern times, yet it must be owned that some of these testimonies may be suspected to have arisen rather from a veneration of Hippocrates, than from accurate observation.

cxxiii. With respect to the opinions of many moderns who deny the prevalence of critical days, they are to be little regarded ; for the observation of the course of continued fevers is known to be difficult and fallacious ; and therefore the regularity of that course may have often escaped inattentive and prejudiced observers.

cxxiv. Our own observations amount to this, that fevers with moderate symptoms, generally cases of the synocha, frequently terminate in nine days, or sooner,

and very constantly upon one or other of the critical days which fall within that period ; but it is very rare in this climate, that cases of either the typhus or synochus terminate before the eleventh day ; and when they do terminate on this day, it is for the most part fatally. When they are protracted beyond this time, I have very constantly found that their terminations were upon the fourteenth, seventeenth, or twentieth day.

In such cases, the salutary terminations are seldom attended with any considerable evacuation. A sweating frequently appears, but is seldom considerable ; and I have hardly ever observed critical and decisive terminations attended with vomiting, evacuations by stool, or remarkable changes in the urine. The solution of the disease is chiefly to be discerned from some return of sleep and appetite, the ceasing of delirium, and an abatement of the frequency of the pulse. By these symptoms we can often mark a crisis of the disease ; but it seldom happens suddenly and entirely ; and it is most commonly from some favorable symptoms occurring upon one critical day, that we can announce a more entire solution upon the next following.

Upon the whole, I am persuaded, that, if observations shall be made with attention, and without prejudice, I shall be allowed to conclude with the words of the learned and sagacious Gaubious : " Fallor, ni sua constiterit " HIPPOCRATI auctoritas, GALENO fides, NATURÆ virtus et ordo."

C H A P. VI.

OF THE METHOD OF CURE IN FEVERS.

SECT. I. *Of the Cure of Continued Fevers.*

cxxv. AS it is allowed, that, in every fever which has its full course, there is an effort of nature, of a salutary tendency, it might be supposed that

the cure of fevers should be left to the operations of nature, or that our art should be only directed to support and regulate these operations, and that we should form our indications accordingly. This plan, however, I cannot adopt, because the operations of nature are very precarious, and not so well understood as to enable us to regulate them properly. It appears to me, that trusting to these operations has often given occasion to a negligent and inert practice; and there is reason to believe, that an attention to the operations of nature may be often superseded by art.

cxxvi. The plan which to me appears to be most suitable, is that which forms the indications of cure upon the view of obviating the tendency to death; while, at the same time, the means of executing these indications are directed by a proper attention to the proximate cause of fevers.

Upon this plan, in consequence of what has been laid down above on the subject of the prognostic, we form three general indications in the cure of continued fevers; and the one or other of these is to be employed according as the circumstances of the fever (ch.) shall direct.

The first therefore is, *To moderate the violence of reaction.*

The second is, *To remove the causes or obviate the effects of debility.* And,

The third is, *To obviate or correct the tendency of the fluids to putrefaction.*

cxxvii. The first indication may be answered, that is the violence of reaction may be moderated.

1. By all those means which diminish the action of the heart and arteries.

2. By those means which take off the spasm of the extreme vessels, which we suppose to be the chief cause of violent reaction.

cxxviii. The action of the heart and arteries may be diminished,

1. By avoiding or moderating those irritations, which, in one degree or other, are almost constantly applied to the body.

2. By the use of certain sedative powers.
3. By diminishing the tension and tone of the arterial system.

CXXIX. The irritations (CXXVIII. 1.) almost constantly applied, are the impressions made upon our senses, the exercise of the body and mind, and the taking in of alienments. The avoiding these as much as possible, or the moderating their force, constitute what is rightly called the ANTIPIHLOGISTIC REGIMENT, proper to be employed in almost every continued fever.

CXXX. The conduct of this regimen is to be directed by the following rules and considerations :

1. Impressions on the external senses, as being stimulant to the system, and a chief support of its activity, should be avoided as much as possible ; those especially of more constant application, those of a stronger kind, and those which give pain and uneasiness.

No impression is to be more carefully guarded against than that of external heat ; while, at the same time, every other means of increasing the heat of the body is to be shunned. Both these precautions are to be observed as soon as a hot stage is fully formed, and to be attended to during its continuance ; excepting in certain cases, where a determination to sweating is necessary, or where the stimulant effects of heat may be compensated by circumstances which determine it to produce a relaxation and revulsion.

2. All motion of the body is to be avoided, especially that which requires the exercise of its own muscles ; and that posture of the body is to be chosen which employs the fewest muscles, and which keeps none of them long in a state of contraction. Speaking, as it accelerates respiration, is particularly to be refrained from.

It is to be observed, that every motion of the body is the more stimulant in proportion as the body is weaker.

3. The exercise of the mind also is a stimulus to the body ; so that all impressions which lead to thought, and those especially which may excite emotion or passion, are to be carefully shunned.

With respect to avoiding impressions of all kinds, an exception is to be made in the case of a delirium coming on, when the presenting of accustomed objects may have the effect of interrupting and diverting the irregular train of ideas then arising in the mind.

4. The presence of recent aliment in the stomach proves always a stimulus to the system, and ought therefore to be as moderate as possible. A total abstinence for some time may be of service; but as this cannot be long continued with safety, we must avoid the stimulus of aliment, by choosing that kind which gives the least. We suppose that alimentary matters are more stimulant, according as they are more alkalescent; and this leads to avoid all animal, and to use vegetable food only*.

As our drinks also may prove stimulant, so all aromatic and spiritous liquors are to be avoided; and, in answering the present indication, all fermented liquors, excepting those of the lowest quality, are to be abstained from.

cxxxii. Beside these stimulant powers more constantly applied, there are others which, although occasional only, yet, as commonly accompanying fevers, must be attended to and removed.

One is, the sense of thirst, which, as a powerful stimulus, ought always, in one way or other, to be removed.

Another stimulus frequently arises from crudities, or corrupted humors in the stomach; and it is to be removed by vomiting, by dilution, or by the use of acids†.

A third stimulus often arises from the preternatural

* The loathing of animal food, which is so conspicuous in fevers, is a falutary provision of nature, by which we are warned from taking in what would certainly not be properly digested, and of course remain a noxious irritation. Indeed, there seems to be a peculiarly defective assimilation of the aliment in fever; hence the impropriety of being over studious to induce patients to swallow much, in opposition to the almost insurmountable aversion which they often have for food. The sparest vegetable diet, as a small quantity of panada or barley gruel, is generally sufficient. With respect to the drink, cooling acidulated liquors, as cream of tartars whey, imperial, &c. or barley water, are the most proper.

† The different vegetable acids are found most convenient as the juices of tamarinds, lemons, oranges, currants, &c.

retention of fæces in the intestines ; and ought to be removed by frequent laxative glysters*.

A fourth stimulus to be constantly suspected in fevers, is a general acrimony of the fluids, as produced by the increase of motion and heat, joined with an interruption of the excretions. This acrimony is to be obviated or removed by the taking in of large quantities of mild antiseptic liquors.

CXXXII. The avoiding of irritation in all these particulars (CXXX. and CXXXI.), constitutes the antiphlogistic regimen absolutely necessary for moderating the violence of reaction ; and, if I mistake not, is proper in almost every circumstance of continued fevers, because the propriety and safety of employing stimulants is often uncertain ; and because several of those above mentioned, beside their stimulant powers, have other qualities by which they may be hurtful.

It appears to me, that the supposed utility of stimulants, in certain cases of fever, has often arisen from a mistake in having ascribed to their stimulant what really depended upon their antispasmodic power.

CXXXIII. A second head of the means (CXXVIII. 2.) for moderating the violence of reaction, comprehends certain sedative powers, which may be employed to diminish the activity of the whole body, and particularly that of the sanguiferous system.

The first of these to be mentioned is the application of cold.

Heat is the chief support of the activity of the animal system, which is therefore provided in itself with a power of generating heat ; but, at the same time, we observe, that this would go to excess, were it not constantly moderated by a cooler temperature in the surrounding atmosphere. When, therefore, that power of the system generating heat is increased, as is commonly

* R. Decoct. pro enem. 3 xii.

Ol. Olivar. 3 ij.

Sulphas Soda, 3 R. m. Ft. Enem. pro re nata injci.

the case in fevers, it is necessary not only to avoid all means of increasing it further, but it seems proper also to apply air of a cooler temperature, or at least to apply it more entirely and freely, than in a state of health.

Some late experiments in the small pox, and in continued fevers, show that the free admission of cool air to the body is a powerful remedy in moderating the violence of reaction ; but what is the mode of its operation, to what circumstances of fever it is peculiarly adapted, or what limitations it requires, I shall not venture to determine, till more particularly instructed by further experience*

cxxxiv. A second sedative power which may be employed in fevers, is that of certain medicines, known, in

* The circumstances which regulate the application of cold, and the value of this remedy in fever, have now been fully ascertained, and form a memorable era in the annals of Medicine.

Dr. William Wright, physician to his majesty's forces, late in the West Indies, transmitted to the London Medical Journal, in the year 1786, an account of several cases of fever, successfully treated by the assuasion of cold water ; and to him we are indebted for introducing this valuable remedy to notice.

Dr. Currie of Liverpool, in a work which does him the highest credit, has prosecuted this subject with equal ability and success. For the cold assuasion, Dr. Currie prefers salt water, saturated brine, or fresh water mixed with vinegar, to fresh water alone ; as he conceives that the salt, by stimulating the cutaneous vessels, in some measure obviates the debilitating effects of the cold. Dr. Wright employed sea water. The patient is exposed naked, and a bucket full of this is suddenly dashed about him. Cold water, without any addition, may be used without any bad consequence, if no other can be easily obtained. Water, at a temperature from 40 to 60, is commonly employed. Its beneficial effects are most conspicuous when used during the height of the diurnal exacerbation, or immediately after it begins to decline ; hence it is employed from six to nine o'clock in the evening with most advantages ; "but it may be safely used at any time of the day, when there is no sense of chilliness present, when the heat of the surface is steadily above what is natural, and when there is no general or profuse perspiration." These considerations merit the utmost attention, and include all the restrictions which must be attended to in its application. With these cautions, the more early its application, the more decisive are the advantages which result from it. When employed on the first or second day, it frequently arrests the progress of the disease. It rarely is attended with such happy effects when used at a later period. For the first eight or ten days, however, it in general moderates considerably the violence of the distemper, and hastens its favorable termination. When employed in the advanced stage of the disease, where there is great prostration of strength, a cordial, a warm wine, should be administered immediately after it. Its general effects are, an abatement of heat, reduction of the frequency of the pulse, relief from oppression, gentle perspiration, and propensity to sleep.

the writings on the *Materia Medica* under the title of **REFRIGERANTS**.

The chief of these are acids of all kinds, when sufficiently diluted ; and they are, in several respects, remedies adapted to continued fevers. Those especially in use are, the Vitriolic and Vegetable, and, on many accounts, we prefer the latter.

cxxxv. Another set of refrigerants are the Neutral Salts, formed of the vitriolic, nitrous, or vegetable acids, with alkalines, either fixed or volatile. All these neutrals, while they are dissolving in water, generate cold ; but as that cold ceases soon after the solution is finished, and as the salts are generally exhibited in a dissolved state, their refrigerant power in the animal body does not at all depend upon their power of generating cold with water. The neutral chiefly employed as a refrigerant is Nitre ; but all the others, compounded as above mentioned, partake more or less of the same quality.

cxxxvi. Besides these neutrals, some metallic salts also have been employed as refrigerants in fevers, and particularly the Sugar of Lead. But the refrigerant powers of this are not well ascertained, and its deleterious qualities are too well known to admit of its being freely used.

cxxxvii. Under the *third* general head (cxxxviii. 3.) of the means to be employed for moderating the violence of reaction, are comprehended the several means of diminishing the tension, tone, and activity of the sanguiferous system. As the activity of this system depends, in a great measure, upon the tone, and this again upon the tension of the vessels given to them by the quantity of fluids they contain, it is evident, that the diminution of the quantity of these must diminish the activity of the sanguiferous system.

cxxxviii. The quantity of fluids contained in the sanguiferous system, may be diminished most conveniently by the evacuations of blood letting and purging.

cxxxix. Nothing is more evident, than that blood letting is one of the most powerful means of diminishing

the activity of the whole body, especially of the sanguiferous system, and it must therefore be the most effectual means of moderating the violence of reaction in fevers. Taking this as a fact, I omit inquiring into its mode of operation, and shall only consider in what circumstances of fevers it may be most properly employed.

CXL. When the violence of reaction, and its constant attendant, a phlogistic diathesis, are sufficiently manifest; when these constitute the principal part of the disease, and may be expected to continue throughout the whole of it, as in the cases of *synocha*, then blood letting is the principal remedy, and may be employed as far as the symptoms of the disease may seem to require, and the constitution of the patient will bear. It is, however, to be attended to, that a greater evacuation than is necessary, may occasion a slower recovery, may render the person more liable to a relapse, or may bring on other diseases.

CXLI. In the case *synocha*, therefore, there is little doubt about the propriety of blood letting; but there are other species of fever, as the *synochus*, in which a violent reaction and phlogistic diathesis appear, and prevail during some part of the course of the disease; while, at the same time, these circumstances do not constitute the principal part of the disease, nor are to be expected to continue during the whole course of it; and it is well known, that, in many cases, the state of violent reaction is to be succeeded, sooner or later, by a state of debility, from the excess of which the danger of the disease is chiefly to arise. It is, therefore, necessary, that, in many cases, blood letting should be avoided; and even although, during the inflammatory state of the disease, it may be proper, it will be necessary to take care that the evacuation be not so large as to increase the state of debility which is to follow*.

* Those fevers which require blood letting, occur ~~so~~ rarely, that is necessary to caution the practitioner, in the strongest manner, against having recourse to this dubious remedy, except in very particular cases. An emergency which requires the use of bleeding may perhaps not occur to those who practise in this country in the course of many years, or even of a lifetime.

CXLII. From all this it must appear, that the employing blood letting, in certain fevers, requires much discernment and skill, and is to be governed by the consideration of the following circumstances :

1. The nature of the prevailing epidemic.
2. The nature of the remote cause.
3. The season and climate in which the disease occurs.
4. The degree of phlogistic diathesis present.
5. The period of the disease.
6. The age, vigor, and plethoric state of the patient.
7. The patient's former diseases and habits of blood letting.
8. The appearance of the blood drawn out.
9. The effects of the blood letting that may have been already practised.

CXLIII. When, after the consideration of these circumstances, blood letting is determined to be necessary, it should be observed, that it is more effectual according as the blood is more suddenly drawn off, and as the body is, at the same time, more free from all irritation, and, consequently, when in a posture in which the fewest muscles are in action.

CXLIV. Another evacuation whereby the quantity of fluids contained in the body can be considerably diminished, is that of Purging.

CXLV. If we consider the quantity of fluids constantly present in the cavity of the intestines, and the quan-

The impending debility which so rapidly succeeds to this inflammatory action, and from which we have so much to fear, is in danger of being fatally increased by this evacuation. Dr. Clark of Newcastle, whose extensive practice gives particular weight to his opinion, in his Treatise on Fevers, has the following pertinent remarks : "I am sensible, that in the beginning of fevers, venesection is the most powerful means of abating the force and activity of the vascular system. But as all fevers, at least such as have occurred in my practice, are, in general, soon succeeded by debility, or symptoms which denote a tendency to putrefaction in the fluids, this evacuation ought to be used with caution. There may be some cases of fever, indeed, that may require venesection in the beginning, particularly where there are evident signs of topical determinations of blood to the head, lungs, or any other part; when the patient is vigorous and plethoric, and when the disease derives its origin from other causes than contagion. In seven years practice, I have only had occasion to direct this evacuation twice in continued fevers, unaccompanied with symptoms of local affection; and I can add, that I never lost a patient from the omission."

tity which may be drawn from the innumerable excretaries that open into this cavity, it will be obvious that a very great evacuation can be made by purging ; and if this be done by a stimulus applied to the intestines, without being at the same time communicated to the rest of the body, it may, by emptying both the cavity of the intestines, and the arteries which furnish the excretions poured into it, induce a considerable relaxation in the whole system ; and therefore, purging seems to be a remedy suited to moderate the violence of reaction in fevers.

CXLVI. But it is to be observed, that as the fluid drawn from the excretaries opening into the intestines, is not all drawn immediately from the arteries, as a part of it is drawn from the mucous follicles only ; and as what is even more immediately drawn from the arteries is drawn off slowly ; so the evacuation will not, in proportion to its quantity, occasion such a sudden depletion of the red vessels as blood letting does ; and therefore cannot operate so powerfully in taking off the phlogistic diathesis of the system.

CXLVII. At the same time, as this evacuation may induce a considerable degree of debility, so, in those cases in which a dangerous state of debility is likely to occur, purging is to be employed with a great deal of caution ; and more especially as the due measure of the evacuation is more difficult to be applied than in the case of blood letting*.

* The cautions which the author gives about purging in fevers, plainly show that it was no favorite practice of his ; and indeed, except where the inflammatory symptoms run high, threatening determinations to particular parts, or the inefficacy of the common glysters point out the propriety of their exhibition, we had better abstain from them. Those which procure an evacuation, with the least irritation, are to be preferred : For this purpose we may take an ounce, or an ounce and a half of phosphorated soda, dissolved in a pint of chicken broth, of which a tea cup full is to be taken every half hour till it operates ; or,

R. Fruct. Tamarind. ʒ iij.

Sennæ. fol. ʒ i. coque in aq. font. ʒ xii. ad colat. ʒ ix cuius cochl. ii. om̄pi semihora, donec alvus respondeat, sunt sum.

CXLVIII. As we shall presently have occasion to observe, that it is of great importance, in the cure of fevers, to restore the determination of the blood to the vessels on the surface of the body; so purging, as in some measure taking off that determination, seems to be an evacuation not well adapted to the cure of fevers.

CXLIX. If, notwithstanding these doubts, (CXLVI. CXLVII. and CXLVIII.) it shall be asserted, that purging, even from the exhibition of purgatives, has often been useful in fevers; I would beg leave to maintain, that this has not happened from a large evacuation; and therefore, not by moderating the violence of reaction, excepting in the case of a more purely inflammatory fever, or of exanthemata of an inflammatory nature. In other cases of fever, I have seen a large evacuation by purging, of mischievous consequence; and if, upon occasion, a more moderate evacuation has appeared to be useful, it is apprehended to have been only by taking off the irritation of retained faeces, or by evacuating corrupted humors which happened to be present in the intestines; for both of which purposes frequent laxatives may be properly employed.

CL. Another set of means (CXXVII. 2.) for moderating the violence of reaction in fevers, are those suited to take off the spasm of the extreme vessels, which we believe to be the irritation that chiefly supports the reaction.

Though I have put here this indication of taking off the spasm of the extreme vessels, as subordinate to the general indication of moderating the violence of reaction, it is however to be observed here, that as fever universally consists in an increased action of the heart, either in frequency or in force, which in either case is supported by a spasm of the extreme vessels, so the indication for removing this is a very general one, and applicable in almost every circumstance of fever, or at least with a few exceptions, to be taken notice of hereafter.

CLI. For taking off the spasm of the extreme vessels, the means to be employed are either internal or external.

CLII. The internal means (CL. I.) are,

1. Those which determine the force of the circulation to the extreme vessels on the surface of the body, and by restoring the tone and activity of these vessels, may overcome the spasm on their extremities.

2 Those medicines which have the power of taking off spasm in any part of the system, and which are known under the tittle of ANTISPASMODICS.

CLIII. Those remedies which are fit to determine to the surface of the body, are,

1. DILUENTS.

2. NEUTRAL SALTS.

3. SUDORIFICS.

4. EMETICS.

CLIV. Water enters, in a large proportion, into the composition of all the animal fluids, and a large quantity of it is always diffused through the whole of the common mass. Indeed, in a sound state, the fluidity of the whole mass depends upon the quantity of water present in it. Water, therefore, is the proper diluent of our mass of blood ; and other fluids are diluent only in proportion to the quantity of water they contain.

CLV. Water may be said to be the vehicle of the several matters which ought to be excreted ; and in a healthy state the fulness of the extreme vessels, and the quantity of excretions, are nearly in proportion to the quantity of water present in the body. In fever, however, although the excretions are in some measure interrupted, they continue in such quantity as to exhale the more fluid parts of the blood ; and while a portion of them is, at the same time, necessarily retained in the larger vessels, the smaller and the extreme vessels, both from the deficiency of fluid, and their own contracted state, are less filled, and therefore allowed to remain in that condition.

CLVI. To remedy this contracted state, nothing is more necessary than a large supply of water or watery fluids, taken in by drinking, or otherwise ; for as any superfluous quantity of water is forced off by the several excretaries, such a force applied, may be a means of

dilating the extreme vessels, and of overcoming the spasm affecting their extremities.

CLVII. Accordingly the throwing in of a large quantity of watery fluids, has been at all times a remedy much employed in fevers; and in no instance more remarkably, than by the Spanish and Italian physicians, in the use of what they call the *Diæta aqua*.

CLVIII. This practice consists in taking away every other kind of aliment and drink, and in giving in divided portions every day, for several days together, six or eight pounds of plain water, generally cold, but sometimes warm. All this, however, is to be done only after the disease has continued for some time, and at least for a week.

CLIX A second means (CLIII. 2.) of determining to the surface of the body, is by the use of neutral salts. These, in a certain dose, taken into the stomach, produce soon after a sense of heat upon the surface of the body; and, if the body be covered close, and kept warm, a sweat is readily brought out. The same medicines, taken during the cold stage of a fever, very often put an end to the cold stage, and bring on the hot; and they are also remarkable for stopping the vomiting which so frequently attends the cold stage of fevers. All this shows that neutral salts have a power of determining the blood to the surface of the body, and may therefore be of use in taking off the spasm which in fevers subsists there.

CLX. The neutral most commonly employed in fevers, is that formed of an alkali with the native acid of vegetables*: but all the other neutrals have more or

* R. Kali præparat. 3 i.

Succ. limon. recen. expressi, 3 fl. vel q. s. ad alkali saturandum.

Aq. font. 3 i.

Aq. cinn. 3 fl. m. ft. haust. tertia quaque hora sum.

Vel,

R. Aq. ammon. acetat. 3 iiij.

less of the same virtue ; and perhaps some of them, particularly the ammoniacal salts, possess it in a stronger degree.

CLXI. As cold water taken into the stomach, often shows the same diaphoretic effects with the neutral salts, it is probable that the effect of the latter depends upon their refrigerant powers mentioned above (cxxxiv.) What is the effect of the neutral salts, given when they are forming and in a state of effervescence ? It is probable that this circumstance may increase the refrigerant power of these salts, and may introduce into the body a quantity of fixed air ; but for these purposes it would seem proper to contrive that the whole of the effervescence should take place in the stomach.

CLXII. A third means (CLIII. 3.) of determining to the surface of the body, and taking off the spasm subsisting there, is by the use of sudorific medicines, and of sweating.

CLXIII. The propriety of this remedy has been much disputed ; and specious arguments may be adduced both for and against the practice.

In favor of the practice, it may be said ;

1. That in healthy persons, in every case of increased action of the heart and arteries, a sweating takes place, and is seemingly the means of preventing the bad effects of such increased action.

2. That in fevers, their most usual solution and termination is by spontaneous sweating.

3. That, even when excited by art, it has been found manifestly useful, at certain periods, and in certain species of fever.

CLXIV. Upon the other hand, it may be urged against the practice of sweating ;

Aq. menth. sativæ, 3 i.

Aq. font. 3 ij.

Tart. emet. gr. ii. cap. æger coch. duo alteris
quaque hora.

When we wish the effervescence to take place in the stomach, the patient first swallows the acid properly diluted, and the alkali, likewise diluted, immediately after.

1. That as in fevers a spontaneous sweating does not immediately come on, so there must be in these some circumstances different from those in the state of health, and which may therefore render it doubtful whether the sweating can be safely excited by art.

2. That, in many cases, the practice has been attended with bad consequences. The means commonly employed have a tendency to produce an inflammatory diathesis; which if not taken off by the sweat following their use, must be increased with much danger. Thus sweating, employed to prevent the accession of intermitting fevers, has often changed them into a continued form, which is always dangerous.

3. The utility of the practice is further doubtful, because sweating, when it happens, does not always give a final determination; as must be manifest in the case of intermittents, as well as in many continued fevers, which are sometimes in the beginning attended with sweatings that do not prove final; and, on the contrary, whether spontaneous or excited by art, seem often to aggravate the disease.

CLXV. From these considerations, it is extremely doubtful if the practice of sweating can be admitted very generally; but at the same time, it is also doubtful, if the failure of the practice, or the mischiefs said to have arisen from it, have not been owing to the improper conduct of the practitioner.

With respect to this last, it is almost agreed among physicians.

1. That sweating has been generally hurtful when excited by stimulant, heating, and inflammatory medicines.

2. That it has been hurtful when excited by much external heat, and continued with a great increase of the heat of the body.

3. That it is always hurtful when it does not soon relieve, but rather increases the frequency and hardness of the pulse, the anxiety and difficulty of breathing, the headache, and delirium.

4. That it is always hurtful if it be urged, when the sweat is not fluid, and when it is partial, and on the superior parts of the body only.

CLXVI. In these cases, it is probable, that either an inflammatory diathesis is produced, which increases the spasm on the extreme vessels ; or that, from other causes, the spasm is too much fixed to yield easily to the increased action of the heart and arteries ; and, upon either supposition, it must be obvious, that urging the sweat, as ready to produce a hurtful determination to some of the internal parts, may be attended with very great danger.

CLXVII. Though the doubts started (CLXIV.) are to be attended to ; and although the practices (CLXV.) having been found hurtful, are therefore to be rejected ; it still remains true,

1. That sweating has certainly been often useful in preventing the accession of fevers, when the times of this have been certainly foreseen, and a proper conduct employed.

2. That, even after fevers have in some measure come on, sweating, when properly employed, either at the very beginning of the disease, or during its approach and gradual formation, has often prevented their further progress.

3. That, even after pyrexiae have continued for some time, sweating has been successfully employed in curing them, as particularly in the case of rheumatism.

4. That certain fevers, produced by a very powerful sedative contagion, have been generally treated, so far as we yet know, most successfully by sweating.

CLXVIII. These instances (CLXVII.) are in favor of sweating, but give no general rule ; and it must be left to further experience to determine how far any general rule can be established in this matter. In the mean time, if the practice of sweating is to be attempted, we can venture to lay down the following rules for the conduct of it.

1. That it should be excited without the use of stimulant inflammatory medicines.

2. That it should be excited with as little external heat, and with as little increase of the heat of the body, as possible.

3. That, when excited, it should be continued for a due length of time, not less than twelve hours, and sometimes for twenty four or forty eight hours; always, however, providing that it proceeds without the circumstances mentioned (CLXV. 3. 4.)

4. That, for some part of the time, and as long as the person can easily bear, it should be carried on without admitting of sleep.

5. That it should be rendered universal over the whole body; and therefore, particularly, that care be taken to bring the sweating to the lower extremities.

6. That the practice should be rendered safer by moderate purging, excited at the same time.

7. That it should not be suddenly checked by cold any how applied to the body.

CLXIX. When attention is to be given to these rules, the sweating may be excited, 1. By warm bathing or a fomentation of the lower extremities. 2. By frequent draughts of tepid liquors, chiefly water, rendered more grateful by the addition of a light aromatic, or more powerful by that of a small quantity of wine. 3. By giving some doses of neutral salts. 4. Most effectually, and perhaps most safely, by a large dose of an opiate, joined with a portion of neutral salts, and of an emetic.

In what cases may cold water, thrown into the stomach in large quantities, be employed to excite sweating*, see CELSUS, Lib. III. chap. vii.—ix.

CLXX. The fourth means (CLIII. 1.) of determining to the surface of the body, and thereby taking off the spasm affecting the extreme vessels, is by the use of emetics.

*Dr. Currie has ascertained, that cold water taken into the stomach, produces effects similar to those which arise from the cold affusion, and may be had recourse to under the same restrictions. As a remedy in fever, it is not near so powerful as the affusion. They are both however, to be reckoned amongst the most powerful means of inducing a diaphoresis, and are likely to supersede most other medicines in this respect, independent of their other effects.

CLXXI. Emetics, and particularly antimonial emetics, have been employed in the cure of fevers ever since the introduction of chemical medicines ; but, for a long time, they were employed by chemists and chemical practitioners only ; and although of late the use of them has become very general, their efficacy is still disputed, and their manner of operating is not commonly explained.

CLXXII. Vomiting is in many respects useful in fevers ; as it evacuates the contents of the stomach ; as it emulgates the biliary and pancreatic ducts ; as it evacuates the contents of the duodenum, and perhaps also of a larger portion of the intestines ; as it agitates the whole of the abdominal viscera, expedes the circulation in them, and promotes their several secretions ; and, lastly, as agitating also the viscera of the thorax, it has like effects there. All these several effects are, in many cases and circumstances of fever, procured with advantage ; but do not properly fall under our view here, where we are to consider only the effect of vomiting in determining to the surface of the body.

CLXXIII. This effect we do not impute to the exercise of vomiting in agitating the whole frame, but to the particular operation of emetics upon the muscular fibres of the stomach, whereby they excite the action of the extreme arteries on the surface of the body, so as thereby effectually to determine the blood into these vessels, remove the atony, and take off the spasm affecting them.

CLXXIV. That such is the power of emetics, will appear from the several considerations mentioned above (XLIV.) ; and, therefore, that they are remedies well suited to the cure of fevers.

CLXXV. Emetics, for that purpose, are administered in two different ways ; that is, either in such doses as may excite full and repeated vomitings ; or in such doses as may excite sickness and nausea, only, with little or no vomiting at all.

CLXXVI. Full vomiting is best suited to the several purposes mentioned CLXXII. ; and is also well suited to determine to the surface of the body, so as thereby to obviate the atony and spasm which lay the

foundation of fever. Thus vomiting, excited a little before the expected accession of the paroxysm of an intermittent, has been found to prevent the paroxysm altogether. And it has been observed also, that when contagion has been applied to a person, and first discovers its operation, a vomit given will prevent the fever, which was otherwise to have been expected. See LIND *on Fevers and Infection*.

CLXXVII. These are advantages to be obtained by exciting vomiting* at the first approach of fevers, or of the paroxysms of fevers ; and after fevers are formed, vomiting may also be employed, to take off, perhaps entirely the atony and spasm, or at least to moderate these, so that the fever may proceed more gently and safely.

CLXXVIII. It is seldom, however, that vomiting is found to produce a final solution of fevers ; and after they are once formed it is commonly necessary to repeat the vomiting several times ; but this is attended with inconvenience, and sometimes with disadvantage. The operation of full vomiting commonly soon ceases, and the exercise of vomiting is often a debilitating power ; and therefore, when the vomiting does not remove the atony and spasm very entirely, it may give occasion to their recurring with greater force.

CLXXIX. For these reasons, after fevers are fully formed, physicians have thought proper to employ emetics in nauseating doses only†. These are capable of exciting the action of the extreme vessels, and their operation is more permanent. At the same time, they often show their power by exciting some degree of sweat ;

* When it is intended to excite vomiting, a table spoonful of the following solution may be taken every twenty minutes till it ensue.

B. Tart. emet. gr. v.

Sp. Lavand. comp. gutt. xv.

Aq. ferven. ʒ iv. M.

† The same objections which the author has adduced against the repetition of vomiting, may be urged against the exhibition of emetics in nauseating doses. They are seldom productive of much advantage, and by exhausting the patient, and accelerating that debility, to which we should always look forward, may prove not a little injurious. Hence, if they do not speedily relieve the symptoms, we should not persevere in their use.

and their operation is rendered more safe, by their commonly producing some evacuation by stool.

CLXXX. Such are the advantages to be procured by nauseating doses of emetics; and it only remains to mention, what are the medicines most fit to be employed in that manner, what are the most proper times for exhibiting, and what is the best manner of administering them.

CLXXXI. The emetics at present chiefly in use, are Ipecacuanha and Antimony.

The former may be employed for every purpose of emetics, particularly those mentioned CLXXXII. It may likewise be employed, either in larger or smaller doses, for determining to the surface of the body; but, even in very small doses, it so readily excites vomiting, as to be with difficulty employed for the purpose of nauseating only; and, however employed, there is reason to believe that its effects are less permanent, and less powerfully communicated from the stomach to the rest of the system, than those of Antimony.

CLXXXII. This, therefore, is generally preferred; and its preparations, seemingly various, may all be referred to two heads: the *one* comprehending those in which the reguline part is in a condition to be acted upon by acids; and therefore, on meeting with acids in the stomach, becomes active: and the *other* comprehending those preparations in which the reguline part is already joined with an acid, rendering it active.

CLXXXIII. Of each kind there are great numbers, but not differing essentially from one another. It will be enough for us to compare the Calx Antimonii Nitrata of the Edinburgh Dispensatory with the Emetic Tartar of the same. The former, as I judge, is nearly the same with what is called James's Powder.* Which of these

* The celebrity of James's Powder, has rendered the nature of its composition an interesting object of enquiry. Dr. Pearson, in a Memoir read before the Royal Society, in the year 1791, has subjected it to an elaborate and ingenious analysis; and the result of his experiments is as follows: "1. That James's Powder consists of phosphoric acid, lime, and antimonial calx; with a minute quantity of calx of iron, which is considered to be an accidental substance. 2. That either these three essential ingredients are united with each other, forming a triple compound, or phosphoric

is best suited to the cure of fevers, as above explained, seems doubtful; but it appears to me, that, although the former may have some advantages from its slower operation, and may thereby seem to be more certainly sudorific and purgative, yet the uncertainty of its dose renders it inconvenient, has often given occasion to the timid to be disappointed, and the bold to do mischief. On the other hand, the dose of the Emetic Tartar can be exactly ascertained; and I think it may be exhibited in such a manner as to produce all the advantages of the other.

CLXXXIV. Whichsoever of these preparations be employed, I judge the most proper time for exhibiting them, to be the time of accesions, or a little before, when that can be certainly known. In continued fevers, the exacerbations are not always very observable: but there is reason to think, that one commonly happens about noon, or soon after it, and another in the evening; and that these therefore are the most proper times for exhibiting emetics.

"ated lime is combined with the antimonial calx, composing a double compound, in the proportion of about 57 parts of calx, and 43 parts of phosphorated lime. .3 That this antimonial calx is different from any other known calx of antimony, in several of its chemical qualities: About three fourths of it are soluble in marine acid, and afford Algaroth powder; and the remainder is not soluble in this menstruum, and is apparently vitrified.

"It appears, by calcining together bone ashes, that is, phosphorated lime, and antimony in a certain proportion, and afterwards exposing the mixture to a white heat, a compound was formed, consisting of antimonial calx and phosphorated lime, in the same proportion, and possessing the same kind of chemical properties as James's Powder."

It is however to be remarked, that almost all experiments, whether of synthesis or analysis, where heat is a primary agent, are subject to sources of fallacy, which it is not always easy to guard against. Mr. Chenevix has endeavored to remove these inconveniences, by effecting the combination in the humid way. He directs us to dissolve, together or separately, equal parts of the white oxyd of antimony, and of phosphate of lime, in the smallest possible quantity of muriatic acid: and then to pour this solution gradually into distilled water, which has been previously alkalized with ammonia. A copious white precipitate takes place, which, properly washed and dried, is a substitute for James's Powder; and appears to be of more constant and uniform strength than others which have been recommended. Its possessing the same general properties of James's Powder, is attested by physicians of the first eminence. See Philosoph. Trans. for 1802, or Nicholson's Journal for January 1802.

CLXXXV. With respect to the manner of administration, that of the Calx Nitrata is simple, as the whole of what is judged a proper dose is given at once, and no more can properly be given till the time of the next accession.

The administration of the Emetic Tartar is different. It is to be given in small doses, not sufficient to excite vomiting ; and these doses, after short intervals, are to be repeated for several times, till sickness, nausea, and some, but not much, vomiting come on. The difference of this administration must depend upon the dose, and the length of the intervals at which it is given. If it be intended that the medicine should certainly operate by stool, the doses are made small, and the intervals long. On the contrary, when vomiting is proper, or when much purging ought to be avoided, and therefore some vomiting must be admitted, the doses are made larger, and the intervals shorter*.

* Dr. Fordyce has a peculiar opinion respecting the operation of the preparations of antimony in fevers. He conceives that their beneficial effects are not to be attributed to the sickness which they excite, but to some other operation ; and he assigns the following reasons for his opinion : " Because there are many other remedies which produce sickness to as great a degree as any preparation of antimony ; yet these have no power whatever of making fever terminate sooner than it would, if it was left to pursue its own course. The root of the squill, for instance, often produces sickness to a much more severe degree than any preparation of antimony ; yet it has never been alledged, that it has the power of carrying off fever sooner than it would go off, supposing that it was allowed to pursue its ordinary progress. Moreover, the author has frequently exhibited the root of the squill as an emetic, and likewise in such doses as to produce nausea without vomiting ; also in such doses as just not to produce nausea, without ever producing any thing similar to the appearance which takes place in a crisis of fever, or without ever once occasioning a fever to terminate sooner than it would have done, if left to pursue its own course. The author has observed, when tartarised antimony has been exhibited in fevers, that when the patient's stomach could not bear a quarter of a grain of it prepared, as has been said without producing sickness, it has happened rarely that it has produced any thing like a crisis, or in any way diminished or carried off the disease. On the contrary, when the stomach would bear more than a quarter of a grain of tartarised antimony, prepared in the same way, and by the very same individual process, without producing any nausea, it has very often produced critical symptoms, or a complete crisis, so as to carry off the disease." It appears, therefore, according to Dr. Fordyce, " That it is not the nausea produced by preparations of antimony, that renders them so efficacious in producing symptoms similar to those that take place in the crisis of a fever." Notwithstanding the plausibility of the above reasoning, the old practice of giving preparations of antimony in the beginning of fever, so as to produce nausea and vomiting, is still generally adhered to.

CLXXXVI. With respect to both kinds of preparations, the repetition is to be made at the times of accession, but not very often ; for if the first exhibitions, duly managed, have little effect, it is seldom that the after exhibitions have much ; and it sometimes happens that the repeated vomitings, and especially repeated purgings, do harm by weakening the patient.

CLXXXVII. The other set of internal medicines (CLII. 2.), which I suppose may be useful in taking off the spasm of the extreme vessels, are those named Antispasmodic. How many of these may be properly employed, I am uncertain, and their mode of operation is involved in great obscurity. It is certain, however, that opium, camphor, musk, and perhaps some others, have been employed in fevers with advantage ; but the circumstances in which they are especially proper and safe, I find difficult to ascertain, and therefore cannot venture here to lay down any general doctrine concerning them.

CLXXXVIII. The external means (CLI.) suited to take off the spasm of the extreme vessels, are BLISTERING and WARM BATHING.

CLXXXIX. What are the effects of Blistering, so frequently employed in fevers, is not yet agreed upon among physicians ; and many different opinions have been maintained on this subject, drawn not only from reasoning, but also from presumed experience. I must not, however, enter into controversy, but shall deliver my own opinion in a few words.

CXC. I am persuaded, that the small quantity of cantharides absorbed from a blistering plaster, is not sufficient to change the consistence of the mass of blood, and, therefore that such a quantity can neither do good, by resolving phlogistic lento, if it exists, nor do harm, by increasing the dissolution of the blood arising from a putrid tendency in it. I, therefore, neglect entirely the effects of cantharides upon the fluids.

CXCI. The inflammation produced by the application of cantharides to the skin, affords a certain proof of their stimulant power ; but, in many persons, the effect of that stimulus is not considerable ; in many, it is not

communicated to the whole system ; and, even when the effect does take place in the whole system, it seems to be taken off very entirely, by the effusion and evacuation of serum from the blistered part. I conclude, therefore, that neither much good is to be expected, nor much harm to be apprehended, from the stimulant power of blistering ; and the certainty of this conclusion is established, by the great benefit arising from the proper practice of blistering in inflammatory diseases.

cxcii. Much has been imputed to the evacuation occasioned by blistering ; but it is never so considerable as to affect the whole system ; and, therefore, can neither, by a sudden depletion, relax the sanguiferous vessels, nor, by any revulsion, affect the general distribution of the fluids.

cxciii. The evacuation, however, is so considerable as to affect the neighboring vessels ; and the manifest utility of blistering near the part affected, in inflammatory diseases, leads me to believe, that blistering, by deriving to the skin, and producing an effusion there, relaxes the spasm of the deeper seated vessels. I apprehend it to be in this manner that the tumor of a joint, from an effusion into the cellular texture under the skin, takes off the rheumatic pain affecting that joint.

cxciv. Analogous to this, it may be held, that the good effects of blistering, in continued fevers, arise from its relaxing the spasm of the extreme vessels, by a communication of the blistered part with the rest of the skin ; and this is illustrated by the effect of blistering in cholic and dysentery.

cxcv. It appears to me that blistering may be employed at any period of continued fevers, but that it will be of most advantage in the advanced state of such fevers, when the reaction being weaker, all ambiguity from the stimulant power of blistering is removed, and when it may best concur with other circumstances tending to a final solution of the spasm.

cxcvi. From the view of this matter given in (cxciii. and cxciv.), it will appear, that the part of the body to which blisters ought to be applied, is indifferent, excepting

upon the suspicion of topical affection, when the blistering ought to be made as near as possible to the part affected.

CXCVII. Whether SINAPISMS, and other RUBEFACTENTIA, act in a manner analogous to what we have supposed of blistering, may be doubtful; but their effects in rheumatism, and other inflammatory diseases, render it probable.

CXCVIII. The other external means of taking off the spasm of the extreme vessels, is Warm Bathing. This was frequently, and in various circumstances, employed by the ancients; but till very lately has been neglected by modern physicians. As the heat of the bath stimulates the extreme vessels, and, with the concurrence of moisture, also relaxes them, it seems to be a safe stimulus, and well suited to take off the spasm affecting them.

CXCIX. It may be applied to the whole body by immersion: but this is in many respects inconvenient; and whether some of the inconveniences of immersion might not be avoided by a vapor bath, I have not learned from experience. I know, however, from much experience, that most of the purposes of warm bathing can be obtained by a fomentation of the legs and feet, if properly administered, and continued for a due length of time, which ought not to be less than an hour.

CC. The marks of the good effects of such a fomentation are, the patient's bearing it easily, its relieving delirium, and inducing sleep.

CCI. Having now considered the several means of satisfying the first general indication in the cure of fevers, I proceed to the second (cxxvi.) which is, *To remove the cause, or obviate the effects of debility.*

CCII. Most of the sedative powers inducing debility, cease to act soon after they have been first applied; and therefore the removing them is not an object of our present indication. There is only one which may be supposed to continue to act for a long time; and that is the contagion applied: But we know nothing of the nature of contagion that can lead us to any measures for removing or correcting it. We know only its effects as a sedative power inducing debility, or as a ferment inducing a tendency to putrefaction in the fluids.

The obviating the latter will be considered under our third general indication, and the former alone is to be considered here.

cciii. The debility induced in fevers by contagion, or other causes, appears especially in the weaker energy of the brain; but in what this consists, or how it may be directly restored, we do not well know. As nature however does, seemingly for this purpose, excite the action of the heart and arteries, we ascribe the continuance of debility to the weaker reaction of the sanguiferous system; so that the means to be employed for obviating debility, are immediately directed to support and increase the action of the heart and arteries; and the remedies used are TONICS or STIMULANTS.

cciv. In contagious diseases, both from the effects which appear, and from dissections, it is known that the tone of the heart and arteries is considerably diminished; and that tonic remedies therefore are properly indicated.

These are to be considered as of two kinds; the first being the power of cold, the second that of tonic medicines.

ccv. The power of cold, as a tonic, I have mentioned above (xc.); and it is employed in fevers in two ways; either as the cold matter is thrown into the stomach, or as it is applied to the surface of the body.

ccvi. As it has been shown above, that the tonic power of cold can be communicated from any one part to every other part of the system; so it will readily be allowed, that the stomach is a part as fit for this communication as any other; and that cold drink, taken into the stomach, may therefore prove an useful tonic in fevers.

ccvii. This the experience of all ages has confirmed: But, at the same time, it has been frequently observed, that in certain circumstances, cold drink, taken into the stomach, has proved very hurtful; and therefore that the use of cold drink in fevers requires some limitations. What these limitations should be, and what are all the circumstances which may forbid the use of cold drink,

is difficult to determine; but it seems clearly forbidden, in all cases where a phlogistic diathesis prevails in the system, and more especially when there are topical affections of an inflammatory nature.

ccviii. The other method of employing cold as a tonic, is by applying it to the surface of the body. The application of cold air to the surface of the body, as a refrigerant power fit to moderate the violence of reaction, I have spoken of above (cxxxi.). but probably it may also be considered here as a tonic, and useful in cases of debility.

ccix. Not only cool air, but cold water also may be applied to the surface of the body, as a refrigerant, and perhaps as a tonic. The ancients frequently applied it with advantage to particular parts as a tonic; but it is a discovery of modern times, that in the case of putrid fevers, attended with much debility, the body may be washed all over with cold water.

ccx. This was first practised at Breslaw in Silesia, as appears from a dissertation, under the title of *Epidemia verna quæ Wratislaviam, anno 1737, afflixit*, to be found in the appendix to the *Acta Nat. Curios.* Vol. X. And from other writers we find, that the practice has passed into some of the neighboring countries; although in this island, so far as I know, we have hitherto had no experience of it.

ccxi. The medicines which have been employed in fevers, as tonics, are various. If the Saccharum Saturni has been found useful, it is probably as a tonic, rather than as a refrigerant; and the Ens Veneris, or other preparations of iron which have been employed, can act as tonics only. The preparations of copper, from their effects in epilepsy, are presumed to possess a tonic power; but whether their use in fevers be founded upon their tonic or their emetic powers, may be uncertain. The use of arsenic and of alum, in intermittent fevers, seems manifestly to depend upon their tonic power. And, upon the whole, there may occur cases of continued fevers, which may be cured by tonics taken from the fossil kingdom: but the use of these has been rare, as well.

as the effects uncertain ; and physicians have employed, more commonly, the vegetable tonics.

ccxii. A great variety of these has been employed in the cure of intermittent fevers ; but how many of them may be employed in continued fevers, or in what circumstances of these fevers, is not well ascertained ; and I shall now only consider the question with respect to the most celebrated of these tonics, the Peruvian Bark.

ccxiii. This bark has been commonly considered as a specific, or as a remedy of which the operation was not understood. But it is certainly allowable to enquire into this matter ; and I apprehend it may be explained.

ccxiv. To this purpose it is to be remarked, that as in many cases the effects of the bark are perceived soon after its being taken into the stomach, and before it can possibly be conveyed to the mass of blood, we may conclude, that its effects do not arise from its operating on the fluids ; and must therefore depend upon its operating on the nerves of the stomach, and being thereby communicated to the rest of the nervous system. This operation seems to be a tonic power, the bark being a remedy in many cases of debility, particularly in gangrene : and, as the recurrence of the paroxysms of intermittent fevers depends upon a recurrence of atony (xxxv. and xxxvi.), so probably the bark, by its tonic power, prevents the recurrence of these paroxysms ; and this is greatly confirmed by observing, that many other tonic medicines answer the same purpose.

ccxv. If the operation of the bark may be thus explained, from its possessing a tonic power, it is easy to perceive why it is improper when a phlogistic diathesis prevails ; and, from the same view, we can ascertain in what cases of continued fever it may be admitted. These are either after considerable remissions have appeared, when it may be employed to prevent the return of exacerbations, on the same footing that it is used in intermittent fevers ; or in the advanced state of fevers, when all suspicion of an inflammatory state is removed, and a general debility prevails in the system ;

and its being then employed is sufficiently agreeable to the present practice.

ccxvi. With respect to the use of the bark, it is proper to add, that good effects are to be expected from it, almost only when given in substance and in large quantity.

ccxvii. Another set of medicines to be employed for obviating debility and its effects, are the direct stimulants (cciii.) These, in some measure, increase the tone of the moving fibres ; but they are different from the tonics, as more directly exciting and increasing the action of the heart and arteries. This mode of their operation renders the use of them ambiguous ; and when an inflammatory diathesis is present, as so often happens in the beginning of fevers, the effects of these stimulants may be very hurtful ; but it still remains probable, that in the advanced state of fevers, when debility prevails, they may be useful.

ccxviii. What are the stimulants that may be most properly employed, I am uncertain, as the use of them in this age has been rare ; but I am disposed to believe that, of all kinds, wine is the best.

ccxix. Wine has the advantage of being grateful to the palate and stomach, and of having its stimulant parts so much diluted, that it can be conveniently given in small doses ; so that it may be employed with sufficient caution ; but it is of little service, unless taken pretty largely.

ccxx. It may be supposed, and on good grounds, that wine has an operation analogous to that of opium, and some other narcotic medicines. It may, indeed, be said, that we can distinctly mark its stimulant power only, which renders its effects in the phrenitic delirium manifestly hurtful, and, in the mild delirium, depending on debility, as remarkably useful. But in all this the analogy with opium is still obvious ; and it is probable, that both wine and opium are more useful by their sedative and antispasmodic, than by their stimulant powers.

ccxxi. These are the means of answering our second general indication (cxxxvi. 2.) ; and I now proceed to the third, which is, *To obviate or to correct the tendency of the fluids to putrefaction**.

ccxxii. This may be done,

1. By avoiding any new application of putrid or putrescent matter.
2. By evacuating the putrid or putrescent matter already present in the body.
3. By correcting the putrid or putrescent matter remaining in the body.
4. By supporting the tone of the vessels, and thereby resisting further putrefaction, or obviating its effects.

ccxxiii. The further application of putrid or putrescent matter may be avoided,

1. By removing the patient from places filled with corrupted air.
2. By correcting the air from which he cannot be removed.
3. By preventing the accumulation of the patient's own effluvia, by a constant ventilation, and by a frequent change of bed clothes and body linen.
4. By the careful and speedy removal of all excremental matters from the patient's chamber.
5. By avoiding animal food, or correcting it.

* It has been matter of dispute, whether putrefaction ever actually takes place in the living body ; and indeed there is little doubt of its being entirely incompatible with life. Dr. Fordyce affirms, " That there is in life, "independent of all other circumstances, a power of preventing putrefaction." But this is rather vague, as dead animal matter, which spontaneously undergoes the putrefactive process, is not, as he conceives, in exactly similar circumstances, independent of vitality. Without having recourse to the spirit of animation, a satisfactory explanation is afforded, from the chemical changes which are continually going on in the living body. The perpetual change which the blood is undergoing in the lungs ; its continual renovation from the aliment, and from absorption in other parts of the body ; its waste in the apposition of new matter to the solids, and expenditure in the formation of the different secretions, are differences more than sufficient to influence the order of attractions ; so that other affinities may predominate than those which promote putrefaction. However justly the existence of putrefaction during life is called in question, there can be little doubt that a strong tendency to it is often observable in fever, as well as in other diseases ; hence the propriety of this indication.

ccxviv. The putrid or putrescent matter, already present in the body, may be evacuated, partly by evacuating frequently the contents of the intestines, and more effectually still, by supporting the excretions of perspiration and urine, by the plentiful use of diluents.

ccxxv. The putrid or putrescent matter remaining in the body, may be rendered more mild and innocent by the use of diluents, or may be corrected by the use of antiseptics. These last are of many and various kinds, but which of them are conveniently applicable, or more particularly suited to the case of fevers, is not well ascertained. Those most certainly applicable and useful, are, acescent aliments, acids of all kinds, neutral salts, and fixed air.

ccxxvi. The progress of putrefaction may be considerably retarded, and its effects obviated, by supporting the tone of the vessels ; and this may be done by tonic remedies, the chief of which are, Cold, and Peruvian Bark, both sufficiently treated of above (ccv. et seq.)

ccxxvii. I have now finished the consideration of the three general indications to be formed in the cure of continued fevers, and have mentioned most of the remedies which have been, upon any occasion, employed in this business. It was necessary, in the first place, to consider these indications and remedies separately, and to explain the operation of the latter more generally ; but from what has been now delivered, compared with what was said above, concerning the difference of fevers, and the signification of their several symptoms in forming the prognostic, I expect it will not be difficult to assign the indication, and to select and combine the several remedies mentioned, so as to adapt them to the several species and circumstances of continued fevers.

I think it may be useful for my Readers to have the whole of the Cure of CONTINUED FEVERS brought under one view, as in the following TABLE :

• IN THE CURE OF CONTINUED FEVERS,
THE INDICATIONS ARE,

I. *To moderate the violence of reaction.*

Which may be done, by

1. Diminishing the action of the heart and arteries, by
 - A. Avoiding or moderating those irritations which are almost constantly applied to the body ; as,
 - a. The impressions made upon our senses, particularly,
 - α . Increased heat, whether arising from
 - $\alpha\alpha$. External heat, or
 - $\beta\beta$. The accumulation of heat of the body,
 - b. The exercise of the body,
 - c. The exercise of the mind,
 - d. The taking in of aliment.
 - e. Particular irritations arising from
 - α . The sense of thirst,
 - β . Crudities or corrupted humors in the stomach,
 - γ . The preternatural retention of fæces,
 - δ . A general acrimony of the fluids.
 - B. Employing certain sedative powers ; as,
 - a. Cold,
 - b. Refrigerants ; the chief of which are,
 - α . Acids of all kinds,
 - β . Neutral salts.
 - γ . Metallic salts.
 - C. Diminishing the tension and tone of the arterial system, by
 - a. Blood letting,
 - b. Purging.
 2. Taking off the spasm of the extreme vessels, by
 - A. Internal means ; which are,
 - a. Those remedies which determine to the surface, as,
 - α . Diluents,
 - β . Neutral salts,

- γ. Sudorifics,
- δ. Emetics.
- b. Those remedies named antispasmodics.
- B. External means ; as,
 - a. Blistering,
 - b. Warm bathing.

II. To remove the causes, or obviate the effects of debility, by

- 1. Supporting and increasing the action of the heart and arteries, by
 - A. Tonics, as,
 - a. Cold,
 - b. Tonic medicines, which are either;
 - α. Fossil, as,
 - αα. Saccharum saturni, &c. or,
 - β. Vegetable, as,
 - ββ. Peruvian Bark.
 - B. Stimulants, as,
 - a. Aromatics, &c.
 - b. Wine.

III. To obviate or correct the tendency of the fluids to putrefaction, by

- 1. Avoiding the application of putrid or putrescent matter, by
 - A. Removing the patient from places filled with corrupted air.
 - B. Correcting the air, from which he cannot be removed.
 - C. Avoiding the accumulation of the patient's own effluvia, by
 - a. A constant ventilation,
 - b. Frequently changing the bed clothes and body linen.
 - D. Removing carefully and speedily all excremental matters.
 - E. Avoiding animal food, or correcting it.
- 2. Evacuating the putrid or putrescent matter already present in the body, by
 - A. Evacuating frequently the intestines.

- B. Supporting the excretions of perspiration and urine, by
 - a. Diluents,
 - b. Neutral salts.
- 3. Correcting the putrid or putrescent matter remaining in the body, by
 - A. Diluents;
 - B. Antiseptics,
 - C. Fixed air.
- 4. Resisting farther putrefaction, or obviating its effects, by
 - Supporting the tone of the vessels, by
Tonic remedies.

SECT. II. *Of the Cure of Intermittent Fevers.*

ccxxviii. It still remains to consider the cure of intermittent fevers ; and, with respect to these, we form also three general indications ;

1. *In the time of intermission, to prevent the recurrence of paroxysms.*
2. *In the time of paroxysms, to conduct these so as to obtain a final solution of the disease.*
3. *To take off certain circumstances which might prevent the fulfilling of the two first indications.*

ccxxix. The first indication may be answered in two ways :

1. By increasing the action of the heart and arteries some time before the period of accession, and supporting that increased action till the period of the accession be over, so as thereby to prevent the recurrence of the atony and spasm of the extreme vessels which give occasion to the recurrence of paroxysms.

2. Without increasing the action of the heart and arteries, the recurrence of paroxysms may be prevented, by supporting the tone of the vessels, and thereby preventing atony, and the consequent spasm.

ccxxx. For the purpose mentioned in (ccxxix. 1.), the action of the heart and arteries may be increased ;

1. By various stimulant remedies, internally given, or externally applied, and that without exciting sweat.

2. By the same remedies, or others so managed as to excite sweating, and to support that sweating till the period of accession be for some time past.

3. By nauseating doses of emetics, given about an hour before the time of accession, thereby supporting and increasing the tone and action of the extreme vessels.

CCXXXI. The tone of the extreme vessels may be supported without increasing the action of the heart and arteries (ccxxix. 2.), by various tonic medicines ; as,

1. Astringents alone.
2. Bitters alone.
3. Astringents and bitters conjoined.
4. Astringents and aromatics conjoined.
5. Certain metallic tonics*.
6. Opiates.

Lastly, An impression of horror.

* Various metallic preparations, as the flowers of zinc, sulphat of zinc, mercury, &c. have been extolled as remedies of intermittent fever. These, however have now fallen into general disrepute. The oxyd of arsenic is the only metallic substance which claims distinct notice. It is a most powerful remedy in this disease ; and, were it not for the deleterious consequences with which it is sometimes attended, would perhaps claim a preference to the bark itself.

The ague drop, which empirics have converted so much to their emolument, and which of course they have so much abused, in treating this disease, is indebted to arsenic for all its virtues. Dr. Fowler, in his Reports on the Use of Arsenic, has given sufficient testimony of its success. He prepares it in the following manner : 64 grains of the oxyd of arsenic are reduced to a fine powder, and mixed with an equal quantity of potash, which is added to half a pound of distilled water in a florence flask, and placed in a sand heat, where it is gently boiled till the arsenic is completely dissolved ; to this solution, when cold, half an ounce of compound spirit of lavender is added, and as much distilled water as makes the whole amount to a pound. From two to twelve drops of this solution are prescribed once or oftener in the day, according to the circumstances of the patient. Other respectable practitioners have corroborated Dr. Fowler's reports of the virtues of this medicine. There are however some considerations which show that this remedy should not be employed but with the utmost caution, and perhaps that it should never be had recourse to, till other medicines, more safe in their operation, have proved unsuccessful. Even in small doses, it sometimes causes excessive vomiting, swellings in different parts of the body, headache, and tremors. It is also, like digitalis and mercury, apt to be accumulated in the body, and to produce alarming and unexpected effects. It has been suggested that it would be more safe, and perhaps equally effectual in its operation, if it was brought to the state of a neutral salt. It is found, according to the process of Guyton, that, when equal quantities of nitrate of potash, and oxyd of arsenic, are distilled together by a strong heat, the nitric acid of the nitrate is decomposed, and the arsenic converted into an acid, which uniting with the alkali, forms the arsenic of potash. This has been employed with advantage.

A good deal of exercise, and as full a diet as the condition of the patient's appetite and digestion may allow of, will be proper during the time of intermission, and may be considered as belonging to this head.

CCXXXII. Of all the tonic remedies mentioned, (cc-
XXXI.) the most celebrated, and perhaps the most certainly effectual, is the Peruvian bark, the tonic power of which we have endeavored to demonstrate above (ccxiv.) and have, at the same time, explained its use in continued fevers.

The same observation as made in ccxvi. is especially proper in the case of intermittents ; and further, with respect to these, the following observations or rules are offered here :

1. That the bark* may be employed with safety at any period of intermittent fevers, providing that at the

* This invaluable medicine, which is now universally held in the highest estimation, had, at its introduction, many prejudices to encounter. Its premature exhibition was supposed to induce visceral obstructions, jaundice, dropsy, &c. These effects, however, which were at first ascribed to the bark, are now completely discredited ; and the most effectual means to prevent their supervening, is by having recourse to the early exhibition of this remedy, which, by cutting short the fever, obviates those consequences which are to be apprehended from its degenerating into a chronic state.

The bark, in substance, is much more powerful than either the extract, decoction, tincture, or infusion ; and is always to be preferred when it does not disorder the stomach or bowels. Oppression of the stomach may often be corrected by the addition of some grateful aromatic ; and looseness will in general be restrained by an opiate, or gum kino. As the taste of the bark is to many highly ungrateful, it is generally exhibited in some vehicle which may conceal its taste. Milk is often had recourse to for this purpose. Butter milk and liquorice have likewise been highly recommended. A few drops of the elixir of vitriol, conjoined with the bark, is often useful in preventing the nausea and loathing which frequently accompany its exhibition.

In children, who often cannot be prevailed upon to swallow this medicine, and in adults, where it will not remain on the stomach, it may be introduced by injection. This, however, should never be had recourse to, but where other means have failed.

Some practitioners have been accustomed to premise different evacuations before they prescribed the bark ; but, in general, the earlier it is had recourse to, the more effectually does it remove the distemper.

When the paroxysm is violent, and the apyrexia short, we should commence immediately after the paroxysm, and continue its administration, in as large doses as the stomach can bear, till the beginning of the ensuing fit. When, however, the apyrexia is of longer continuance, and especially if the disease is milder, it is better to delay its exhibition till within seven or eight hours of the approaching paroxysm.

When a marked inflammatory diathesis is present, if the heat is intense, the pulse strong, full, and hard, the breathing very laborious, accompanied with pains in different parts of the body, the opening a vein often renders the subsequent administration of the bark considerably more effectual.

same time there be neither a phlogistic diathesis prevailing in the system, nor any considerable or fixed congestion present in the abdominal viscera.

2. The proper time for exhibiting the bark in intermittent fevers, is during the time of intermission ; and where intermissions are to be expected, it is to be abstained from in the time of paroxysm.

3. In remittents, though no entire apyrexia occurs, the Bark may be given during the remissions ; and it should be given, even though the remissions be inconsiderable, if, from the known nature of the epidemic, intermissions or considerable remissions are not to be soon expected, and that great danger is apprehended from repeated exacerbations.

4. In the case of genuine intermittents, while a due quantity of bark is to be employed, the exhibition of it ought to be brought as near to the time of accession as the condition of the patient's stomach will allow.

5. In general, in all cases of intermittents, it is not sufficient that the recurrence of paroxysms be stopped for once by the use of the bark ; a relapse is commonly to be expected, and should be prevented by the exhibition of the bark, repeated at proper intervals.

ccxxxiii. Our second general indication for conducting the paroxysms of intermittent fevers, so as to obtain a final solution of the disease, may be answered.

1. By exhibiting emetics during the time of the cold stage, or at the beginning of the hot.

2. By opiates given during the time of the hot stage.

ccxxxiv. The circumstances which may especially prevent the fulfilling of those two indications, and therefore give occasion to our third, are, a phlogistic diathesis prevailing in the system, and congestions fixed in the abdominal viscera. The first must be removed by blood letting and the antiphlogistic regimen ; the second, by vomiting and purging.

Where these measures are not immediately effectual, I hold it safer to attempt the cure of the disease by the means pointed out in general in ccxxix. rather than by those in article second of the same paragraph.

BOOK II.

OF INFLAMMATIONS,
OR PHLEGMASIAE.

C H A P. I.

OF INFLAMMATION IN GENERAL.

SECT. I. *Of the Phenomena of Inflammation.*

CCXXXV. WHEN any part upon the surface of the body is affected with unusual redness, heat, pain and tumor, we name the disease an Inflammation or Phlegmasia. These symptoms of inflammation are never considerable, without the whole system being at the same time affected with pyrexia.

CCXXXVI. As the external, so likewise the internal, parts may be affected with inflammation ; and we judge them to be so, when, together with pyrexia, there is a fixed pain in any internal part, attended with some interruption in the exercise of its functions.

CCXXXVII. We judge of the presence of inflammation also from the state of the blood drawn out of the veins. When the blood, after cooling and concreting, shows a portion of the gluten separated from the rest of the mass, and lying on the surface of the crassamentum ; as such separation happens in all cases of more evident phlegmasia ; so, in ambiguous cases, we, from this appearance, joined with other symptoms, infer the presence of inflammation. At the same time, it must be observed, that as several circumstances in blood letting, may prevent this separation of gluten from taking place in blood otherwise disposed to it ; so, from

the absence of such appearance, we cannot always conclude against the presence of inflammation.

CCXXXVIII. I cannot easily give any other general history of the phenomena of inflammation than what is contained in the three preceding paragraphs ; and the variations which may take place in its circumstances, will occur to be more properly taken notice of under the several heads of the particular genera and species to be hereafter mentioned. I proceed, therefore, to inquire into the proximate cause of inflammation in general.

SECT. II. *Of the Proximate Cause of Inflammation.*

CCXXXIX. The phenomena of inflammation (CCXXXV.) all concur in showing, that there is an increased impetus of the blood in the vessels of the part affected ; and as, at the same time, the action of the heart is not always evidently increased, there is reason to presume that the increased impetus of the blood in the particular part, is owing especially to the increased action of the vessels of that part itself.

CCXL. The cause of this increased action in the vessels of a particular part, is therefore what we are to enquire after, and to consider as the proximate cause of inflammation.

In many cases, we can manifestly perceive, that inflammation arises from the application of stimulant substances to the part. When the application of such stimulants therefore is evident, we seek for no other cause of inflammation ; but as in many cases such application is neither evident nor, with any probability, to be supposed, we must, in such cases, seek for some other cause of the increased impetus of the blood in the vessels of the part.

CCXLI. Many physicians have supposed, that an obstruction of the extreme vessels, any how produced, may prove a cause of inflammation ; and particularly, that this may arise from an obstruction formed by a matter stopping up these vessels : but many difficulties attend this doctrine.

1. The opinion seems chiefly to have arisen from the appearance of the blood described in ccxxxvii. when the separated gluten was considered as a preternatural and morbid matter : but we now know very certainly, that this gluten is constantly a constituent part of the human blood ; and that it is only a peculiar separation of the parts of the blood that happens in consequence of inflammation, and some other circumstances, which gives occasion to the appearance that was falsely considered as a mark of a morbid lento in the blood.

2. There are no experiments directly in proof of a preternatural lento prevailing in the mass of blood ; nor is there evidence of certain parts of the blood occasionally acquiring a greater density and force of cohesion than ordinary ; neither is there any proof of the denser, or more coherent parts, being present in the mass of blood in such greater proportion than usual, as to occasion a dangerous spissitude. The experiments of Dr. Browne Langrish on this subject afford no conclusion, having been made on certain parts of the blood separated from the rest, without attending to the circumstances of blood letting, which very much alter the state of the separation and concretion of the blood drawn out of the veins.

3. The supposition of a preternatural lento or viscidity of the blood, is not well founded ; for it is probable, that nature has specially provided against a state of the fluids, so incompatible with the exercise of the most important functions of the animal economy. While motion continues to prevent any separation of parts, and heat continues to preserve the fluidity of the more viscous, there seems to be always so large a proportion of water present as to give a sufficient fluidity to the whole. I must own that this is not absolutely conclusive ; but I still repeat it, as giving a probability to the general argument.

4. In the particular case of inflammation, there are several circumstances which render it propable that the blood is then more fluid than usual.

5. I presume that no such general lensor, as Boerhaave and his disciples have supposed, does ever take place ; because, if it did, it must show more considerable effects than commonly appear.

6. Besides the supposition of an obstructing lensor, physicians have supposed that an obstruction may be formed by an impermeable matter of another kind, and that such an obstruction may also be the cause of inflammation. This supposition is what is well known in the schools under the title of an *error loci* ; but it is an opinion that I cannot find to be at all probable : for the motion of the blood in the extreme vessels is so weak and slow, as readily to admit a retrograde course of it ; and therefore, if a particle of blood should happen to enter a vessel whose branches will not allow of its passage, it will be moved backwards, till it meet with a vessel fit for transmitting it ; and the frequent ramifications and anastomoses of the extreme arteries are very favorable to this. I must own indeed that this argument is not absolutely conclusive ; because I allow it to be pretty certain, that an *error loci* does actually upon occasion happen : but, for the reasons I have given, it is probable that it seldom happens, and is therefore rarely the cause of inflammation ; or if it be, that it is not merely by the obstruction that it produces ; as, among other reasons, I conclude particularly from the following argument.

7. Though an obstruction should be supposed to take place, it will not be sufficient for producing the effects, and exhibiting the phenomena that appear in inflammation. The theory that has been commonly employed on this occasion is by no means satisfying ; and in fact it appears, from many observations and experiments, that considerable obstruction may be formed, and may subsist, without producing the symptoms of inflammation.

CCXII. Obstruction, therefore, from a matter stopping up the vessels, *Gaub. Pathol.* 249. i. is not to be considered as the primary cause of inflammation ; but, at the same time, it is sufficiently probable, that some degree of obstruction does take place in every case of inflamma-

tion. The distension, pain, redness, and tumor, attending inflammation, are to be explained only by supposing, that the extremities of the arterics do not readily transmit the unusual quantity of blood impelled into them by the increased action in the course of these vessels. Such an obstruction may be supposed to happen in every case of an increased impetus of the blood; but it is probable, that in the case of inflammation, there is also a preternatural resistance to the free passage of the fluids.

CCXLIII. From the doctrine of fever, we are led to believe, that an increased action of the heart and arteries is not supported, for any length of time, by any other means than a spasm affecting the extreme vessels; and that the same spasm takes place in inflammation, seems likely, because that every considerable inflammation is introduced by a cold stage, and is accompanied with that and other circumstances of pyrexia. It seems also probable, that something analogous to this occurs even in the case of those inflammations which appear less considerable, and to be purely topical.

CCXLIV. From all this, the nature of inflammation may, in many cases, be explained in the following manner: Some causes of inequality in the distribution of the blood, may throw an unusual quantity of it upon particular vessels, to which it must necessarily prove a stimulus. But, further, it is probable, that, to relieve the congestion, the *vis medicatrix naturæ* increases still more the action of these vessels; and which, as in all other febrile diseases, it effects by the formation of a spasm on their extremities.

CCXLV. A spasm of the extreme arterics, supporting an increased action in the course of them, may therefore be considered as the proximate cause of inflammation; at least, in all cases not arising from direct stimuli applied; and even in this case, the stimuli may be supposed to produce a spasm of the extreme vessels.

CCXLVI. That in inflammation, there is the concurrence of a constriction of the extreme vessels, with an increased action in the other parts of them, seems proba-

ble, from the consideration of Rheumatisin. This is a species of inflammation which is often manifestly produced, either by cold applied to over distended vessels, or by causes of an increased impetus, and over distension in vessels previously constricted : Hence the disease especially appears at seasons liable to frequent and considerable vicissitudes of heat and cold.

To this we may add, that the parts of the body most frequently affected with inflammation, are those exposed both to over distension, from a change in the distribution of the fluids, and, at the same time, to the immediate action of cold : Hence quinsies and pneumonic inflammations are more frequent than any others.

CCXLVII. That a spasm of the extreme vessels takes place in inflammation, is to be further presumed from what is at the same time the state of the whole arterial system. In every considerable inflammation, though gha-rising in one part only, an affection is communicated to the whole system, in consequence of which an inflammation is readily produced in other parts beside that first affected. This general affection is well known among physicians, under the name of the DIATHESIS PHLOGISTICA. It appears most commonly in persons of the most rigid fibres ; is often manifestly induced by the tonic or astringent powers of cold ; is increased by all tonic and stimulant powers applied to the body ; is always attended with a hardness of the pulse ; and is most effectually taken off by the relaxing power of blood letting. From these circumstances, it seems probable, that the diathesis phlogistica consists in an increased tone, or contractility, and perhaps in an increased contraction of the muscular fibres of the whole arterial system. Such a state of the system seems often to arise, and subsist for some time, without the apparent inflammation of any particular part ; but such a state of system renders it likely, that a spasm may, at the same time, readily arise in any of the extreme vessels, and a particular inflammation be there produced^t. It does, however, appear, also,

* It will perhaps not be improper to give here a short view of a recent favorite doctrine of inflammation, which was first advanced by Mr. Allen. It

that the general diathesis frequently arises from inflammation begun in a particular part.

CCXLVIII. I have thus endeavored, in the case of inflammation, to explain the state of the whole system, as well as that of the part more particularly affected. The latter I have considered as when in its first formation ; but after it has subsisted for some time, various changes take place in the part affected, and of these I must now take notice.

SECT. III. *Of the Terminations of Inflammation.*

CCXLIX. If an inflammation be cured while the state and texture of the part remain entire, the disease is said to be terminated by RESOLUTION.

This happens when the previous congestion and spasm have been in a moderate degree, and the increased impetus of the blood has been sufficient to overcome the spasm, to dilate the vessels, and to remove the congestion, so that the part is restored to its ordinary and healthy state.

A resolution takes place also when the increased impetus of the fluids has produced an increased exhalation.

It is conceived, that inflammation, instead of arising from an increased action of the vessels of the part, is to be ascribed to a debilitated action, or at least to their diminution of power to the *vis a tergo*. It is asserted, that we cannot conceive how a more vigorous contraction of the vessels can allow them to contain a greater quantity of blood ; on the contrary, it appears that an increased contraction should diminish their area, so that, although a greater quantity is transmitted through them, they must contain less. The only cause of dilatation is, when there exists a disproportion between the *vis a tergo*, and the contractile power of the vessels. It is supposed therefore, that in a part affected with inflammation, the small arteries are either in a state of comparative debility, or that the larger vessels act with disproportioned force. It is likewise supposed, that the inflammation subsides in proportion as the debilitated action of the capillaries is removed, and that the cure is completed by restoring the equilibrium between the action of the larger arteries and these vessels. Microscopic observation has been likewise called to the support of this doctrine ; and it has been observed, that the application of stimuli, while they increased the rapidity of circulation, instead of producing any thing like inflammation, appeared to diminish the size of the vessels, and to render the part paler to which they were applied. The state of the circulation in an inflamed part, has likewise been subjected to examination ; and "on observing the part through the microscope, where the inflammation was greatest, the vessels were most dilated, and the motion of the blood was slowest." It has likewise been observed, that the predisposing causes, and most approved method of cure, fall in with this theory of inflammation. See Dr. Wilson on *Febbrile Diseases*, Vol. III.

tion into the adjoining cellular texture, or an increased excretion in some neighboring part, and has thereby relaxed the spasm, and relieved the congestion, in the vessels of the part more particularly affected.

Lastly, a resolution may take place, when the increased impetus of the blood, in the whole system, occasions an evacuation, which, though in a distant part, may prove sufficient to take off the phlogistic diathesis of the whole system, and thereby relieve the congestion and spasm of the particular part affected by inflammation.

CCL. The tumor which appears in inflammation may be imputed in part to the congestion of fluids in their proper vessels, but is owing chiefly to an effusion of matter into the adjoining cellular texture; and, accordingly, tumors seldom appear but in parts adjoining to a lax cellular texture. If, in this case, the matter effused be only a larger quantity of the ordinary exhaling fluid, this, when the free circulation in the vessels is restored, will be readily absorbed, and the state of the part will become the same as before. But if the increased impetus of the blood, in an inflamed part, dilate the exhalent vessels to such a degree, that they pour out an entire serum, this will not be so readily reabsorbed; and, from the experiments of Sir John Pringle, and especially from those of Mr. Gaber, *Miscell. Taurin.* Vol. II. we learn, that the serum, under stagnation, may suffer a particular change, by having the gluten present in it changed into a white, opaque, moderately viscid, mild liquor, which we name Pus *. When this change takes

* This idea of the formation of pus is now generally abandoned, and it is by Hunter, with more probability, referred to a particular secretion. We see, in cases of extravasation, that serum is poured out, and again reabsorbed, without any appearance of pus. Pus is likewise observed to be poured out, from an open ulcerated surface, without any previous stagnation or reabsorption. The following observations on pus are extracted from Mr. John Hunter's elaborate work on Inflammation and Gun shot Wounds. When treating on pus, he remarks, that "we must look upon it as a new combination of the blood itself and must be convinced, that, in order to carry the decompositions and combinations necessary for producing this effect, either a new or peculiar structure of vessels must be formed, or a new disposition, and, of course, a new mode of action of the old must take place. This new structure, or disposition of vessels, I shall call glandular and the effect, or pus, a secretion."—"True pus has certain properties, viz." Globules swimming in a fluid, which is coagulable by a solution of sal ammoniac, and,

place in the inflamed part, as it is at the same time attended with an abatement of the redness, heat, and pain which before distinguished the inflammation, so the disease is said to be terminated by SUPPURATION, and an inflamed part, containing a collection of pus, is called an ABSCESS.

CCLI. In inflammation, the tendency of it to suppuration may be discovered, by the long continuance of the inflammation, without the symptoms of resolution; by some remission of the pain of distension; by the pain becoming of a throbbing kind, more distinctly connected with the pulsation of the arteries; by the pulse of the arteries being fuller and softer; and often, by the patient's being frequently affected with cold shivering. The period at which this takes place is not determined, but may be sometimes sooner, sometimes later. When the tendency is determined, the time necessary to a complete suppuration is different in different cases.

When pus is completely formed, the pain in the part entirely ceases, and a weight is felt in it. If the collection be formed immediately under the skin, the tumor becomes pointed, the part becomes soft, and the fluctuation of the fluid within can commonly be perceived; while, at the same time, for the most part, the redness of the skin formerly prevailing is very much gone.

CCLII. In abscesses, while the pus is formed of one part of the matter which had been effused, the other and thinner parts are reabsorbed, so that, in the abscess,

"at the same time, a consequent of inflammation."—"These globules swim "in a fluid, which we should at first suppose to be the serum of the blood; "for it coagulates with heat, like serum, and most probably is mixed with a "small quantity of coagulating lymph; for pus in part coagulates, after having been discharged from the secreting vessels. But although it is thus "far similar to serum, it has properties that serum has not."—"The proportion that these white globules in the pus bear to the other parts, depends "on the health of the parts which formed it; for when they are in a large "proportion, the matter is thicker and whiter, and is called good matter; "for these appearances in the matter are more than the result of certain "natural processes going on in the solid: the effect of which processes is, to "produce the disposition on which both suppuration and granulation depend."—"Pus is so far of the same specific nature with the part which "produces it, that it does not become an irritator of the part; it is perfectly "in harmony with it. This is similar to every other secretion of stimulating "fluids."

when opened, a pus alone appears. This pus, however, is not the converted gluten alone; for the conversion of this being the effect of a particular fermentation, which may affect the solid substance of the part and perhaps every solid of animal bodies; so it most readily, and particularly affects the cellular texture, eroding much of it, which thereby becomes a part of the pus. It generally happens also, that some of the smaller red vessels are eroded, and thereby some red blood often appears mixed with the pus in abscesses, upon the whole, the internal surface of an abscess is to be considered as an ulcerated part.

CCLIII. This account of suppuration explains why an abscess, when formed, may either spread into the cellular texture of the neighboring parts; or, by eroding the incumbent teguments, be poured out upon the surface of the body, and produce an open ulcer.

CCLIV. We have here given the idea of an abscess as a collection of matter following inflammation; but the term has been applied to every collection of matter effused, and changed by stagnation in an inclosed cavity.

The matter of abscesses, and of the ulcers following them, is various, according to the nature of what is effused, and which may be,

1. A matter thinner than serum.
2. An entire and pure serum.
3. A quantity of red globules.
4. A matter furnished by particular glands seated in the part.
5. A mixture of matters from different sources, changed by peculiar fermentation.

It is the second only which affords a proper pus; the effusion whereof, whether in suppurating parts or ulcers, seems to be the peculiar effect of an inflammatory state of the vessels; and, for this reason it is, that when ulcers do not produce a proper pus, a circumstance always absolutely necessary to their healing, we, in many cases, bring the ulcers to a state of proper suppuration, by the application of stimulants exciting inflammation, such as balsams, mercury, copper, &c.

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CCLV. When the matter effused into the cellular texture of an inflamed part, is tainted with a putrid ferment, this produces, in the effused matter, a state approaching more or less to that of putrefaction. When this is in a moderate degree, and affects only the fluids effused, with the substance of the cellular texture, the part is said to be affected with GANGRENE ; but if the putrefaction affect also the vessels and muscles of the part, the disease is said to be a SPHACELUS.

CCLVI. A gangrene, and its consequences, may arise from a putrid ferment diffused in the mass of blood, and poured out with the serum effused, which it operates upon more powerfully while the serum is stagnant, and retained in the heat of the body : But it may also arise from the peculiar nature of the matter effused being disposed to putrefaction ; as particularly seems to be the case of the red globules of the blood effused in a large quantity. In a third manner also, a gangrene seems frequently to arise from the violent excitement of the inflammation destroying the tone of the vessels ; whereby the whole fluids stagnate, and run into putrefaction, which taking place in any degree, destroys still further the tone of the vessels, and spreads the gangrene.

CCLVII. In inflammation, the tendency to gangrene may be apprehended from an extreme violence of pain and heat in the inflamed part, and from a great degree of pyrexia attending the inflammation.

The actual coming on of gangrene may be perceived, by the color of the inflamed part changing from a clear to a dark red ; by blisters arising upon the part ; by the part becoming soft, flaccid, and insensible ; and by the ceasing of all pain, while these appearances take place.

As the gangrene proceeds, the color of the part becomes livid, and by degrees quite black ; the heat of the part entirely ceases ; the softness and flaccidity of the part increase ; it loses its consistence, exhales a cadaverous smell, and may then be considered as affected with sphacelus.

CCLVIII. Gangrene is thus a *third* manner in which inflammation terminates: and the schools have commonly marked a *fourth* termination of inflammation; which is by a scirrhous, or an indolent hardness of the part formerly affected with inflammation. This however is a rare occurrence, and does not seem to depend so much upon the nature of inflammation, as upon the circumstances of the part affected. It is in glandular parts chiefly that scirrhosity is observed; and it is probably owing to the parts readily admitting a stagnation of the fluids. I have observed that inflammation seldom induces scirrhous; but that this more commonly arises from other causes; and when inflammation supervenes, which is sooner or later apt to do, it does not so commonly increase as change the scirrhosity into some kind of abscess. From these considerations, it does not seem necessary to take any further notice of scirrhous as a termination of inflammation.

CCLIX. There are, however, some other terminations of inflammation not commonly taken notice of, but now to be mentioned.

One is, by the effusion of a portion of the entire mass of blood, either by means of rupture or of anastomosis, into the adjoining cellular texture. This happens especially in inflammations of the lungs, where the effused matter by compressing the vessels, and stopping the circulation occasions a fatal suffocation; and this is perhaps the manner in which pneumonic inflammation most commonly proves fatal.

CCLX. Another kind of termination is, that of certain inflammations on the surface of the body, when there is poured out under the cuticle a fluid, which being too gross to pass through its pores, therefore separates it from the skin, and raises it up into the form of a vesicle containing the effused fluid; and by which effusion the previous inflammation is taken off.

CCLXI. Beside these already mentioned, I believe there is still another manner in which inflammation terminates. When the internal parts are affected with inflammation, there seems to have been almost always upon their sur-

face an exudation, which appears partly as a viscid concretion upon their surface, and partly as a thin serous fluid effused into the cavities in which the inflamed viscera are placed. Though we have become acquainted with these appearances only, as very constantly accompanying those inflammations which have proved fatal, it is however probable that like circumstances may have attended those which were terminated by resolution, and may have contributed to that event. It is in favor of this supposition that there are instances of pneumonic inflammation terminating in a hydrothorax.

SECT. IV. *Of the Remote Causes of Inflammation.*

CCLXII. The remote causes of inflammation may be reduced to five heads.

1. The application of stimulant substances, among which are to be reckoned the action of fire, or burning.
2. External violence operating mechanically in wounding, bruising, compressing, or overstretching the parts.
3. Extraneous substances, lodged in any part of the body, irritating by their chemical acrimony or mechanical form, or compressing by their bulk or gravity.
4. Cold, in a certain degree, not sufficient immediately to produce gangrene.
5. An increased impetus of the blood determined to a particular part.

It will not be difficult to understand how these remote causes, singly or in concurrence, produce the proximate cause of inflammation.

CCLXIII. It does not appear, that in different cases of inflammation there is any difference in the state of the proximate cause, except in the degree of it; and though some difference of inflammation may arise from the difference of the remote causes, yet this is not necessary to be taken notice of here; because the different appearances which attend different inflammations may be referred, for the most part, to the difference of the part

affected, as will appear when we shall consider the several genera and species marked in the Nosology. When I come to treat of these, I shall find a more proper occasion for taking notice of the different states of the proximate, or of the differences of the remote cause, than by treating of them in general here.

SECT. V. *Of the Cure of Inflammation.*

CCLXIV. The indications of cure in inflammation are different, according as it may still be capable of resolution, or may have taken a tendency to the several other terminations above mentioned. As the tendency to these terminations is not always immediately evident, it is always proper, upon the first appearance of inflammation, to attempt the cure of it by resolution. For this purpose, the indications of cure are,

1. To remove the remote causes, when they are evident, and continue to operate.
2. To take off the phlogistic diathesis affecting either the whole system, or the particular part.
3. To take off the spasm of the particular part, by remedies applied either to the whole system, or to the part itself.

CCLXV. The means of removing the remote causes will readily occur, from considering the particular nature and circumstances of the different kinds. Acrid matters must be removed, or their action must be prevented, by the application of correctors or demulcents. Compressing and overstretching powers must be taken away; and, from their several circumstances, the means of doing so will be obvious.

CCLXVI. The means of taking off the phlogistic diathesis of the system, are the same with those for moderating the violence of reaction in fever, which are mentioned and treated of from cxxvii. to cxlix. and therefore need not be repeated here. I only observe, that in the use of those remedies, there is less occasion for any reserve than in many cases of fever; and more particularly, that topical bleedings are here particularly indicated and proper.

CCLXVII. The means of taking off the spasm of the particular part, are nearly the same as those mentioned above, for taking off the spasm of the extreme vessels in the case of fever, and which are treated of from CL. to CC. Only it is to be observed here, that some of these are here especially indicated, and that some of them are to be directed more particularly to the part especially affected ; the management of which will be more properly considered when we shall treat of particular inflammations.

CCLXVIII. When a tendency to suppuration (CCLI.) is distinctly perceived, as we suppose it to depend upon the effusion of a fluid which cannot be easily reabsorbed, so it becomes necessary that this fluid be converted into pus, as the only natural means of obtaining its evacuation : and as the effusion is perhaps seldom made without some rupture of the vessels, to the healing of which a pus is absolutely necessary ; so, in the case of a tendency to suppuration, the indication of cure always is, to promote the production of a perfect pus as quickly as possible.

CCLXIX. For this purpose, various remedies, supposed to possess a specific power, have been proposed ; but I can perceive no such power in any of them ; and, in my opinion, all that can be done is, to favor the suppuration by such applications as may support a proper heat in the part, as by some tenacity may confine the perspiration of the part, and as, by an emollient quality, may weaken the cohesion of the teguments, and favor their erosion.

CCLXX. As in the case of certain effusions, a suppuration is not only unavoidable, but desirable, it may be supposed that most of the means of resolution formerly mentioned should be avoided ; and accordingly our practice is commonly so directed. But, as we observe, on the one hand, that a certain degree of increased impetus, or of the original circumstances of inflammation, is requisite to produce a proper suppuration ; so it is then especially necessary to avoid those means of resolution that may diminish too much the force of the cir-

culation. And as, on the other hand, the impetus of the blood, when violent, is found to prevent the proper suppuration ; so, in such cases, although a tendency to suppuration may have begun, it may be proper to continue those means of resolution which moderate the force of the circulation.

With respect to the opening of abscesses, when completely formed, I refer to the writings on surgery.

CCLXXI. When an inflammation has taken a tendency to gangrene, that event is to be prevented by every possible means ; and these must be different, according to the nature of the several causes occasioning that tendency, as may be understood from what has been already said of them. After a gangrene has, in some degree, taken place, it can be cured only by the separation of the dead from the living parts. This, in certain circumstances, can be performed by the knife, and always most properly, when it can be so done.*

In other cases, it can be done by exciting a suppuratory inflammation on the verge of the living part, whereby its cohesion with the dead may be every where broken off, so that the latter may fall off by itself. While this is doing, it is proper to prevent the further putrefaction of the part, and its spreading wider. For this purpose, various antiseptic applications have been proposed; but it appears to me, that, while the teguments-

* The propriety of scarification, so as to separate the dead from the sound parts, is now justly called in question. The inflammation which is thus excited, is apt to go greater lengths than are necessary for throwing off the dead from the living parts, and even to favor the spreading of the gangrene ; besides the introduction of putrescent matter, where the incision has been made, may prove a hurtful irritation. Where the gangrene is deep, a superficial scarification, just sufficient to give an outlet to the vitiated matter, is advisable. Various external stimulants have been recommended. A solution of sal ammoniac in vinegar and water, made by dissolving a drachm in two ounces of vinegar and six of water, is preferred by Mr. Benjamin Bell. See Vol. I. p. 160 of the seventh edition of his *Surgery*, which those who wish farther information on this subject would do well to consult.

Bark and wine are undoubtedly valuable remedies in gangrene ; but their indiscriminate exhibition in every case where gangrenous symptoms have supervened, may do much harm. When the inflammatory diathesis still prevails, and the pulse continues full and hard, with violent local symptoms of inflammation, a continuation of the antiphlogistic regimen will still be necessary ; as we know that the subsequent gangrene is, *ceteris paribus*, proportioned to the violence of the previous excitement.

are entire, these applications can hardly have any effect; and, therefore, that the fundamental procedure must be to scarify the part, so as to reach the living substance, and by the wounds made there, to excite the suppuration required. By the same incisions also, we give access to antiseptics, which may both prevent the progress of the putrefaction in the dead, and excite the inflammation necessary on the verge of the living part.

CCLXXII. When the gangrene proceeds from a loss of tone, and when this, communicated to the neighboring parts, prevents that inflammation which, as I have said, is necessary to the separation of the dead part from the living, it will be proper to obviate this loss of tone by tonic medicines given internally; and, for this purpose, the Peruvian bark has been found to be especially effectual. That this medicine operates by a tonic power, I have endeavored to prove above (ccxiv.); and from what is said in ccxv. the limitations to be observed in employing it may also be learned. When the gangrene arises from the violence of inflammation, the bark may not only fail of proving a remedy, but may do harm; and its power as a tonic is especially suited to those cases of gangrene which proceed from an original loss of tone, as in the case of palsey and cedema; or to those cases of inflammation where a loss of tone takes place, while the original inflammatory symptoms are removed.

CCLXXIII. The other terminations of inflammation, either do not admit of any treatment, except that of preventing them by the means of resolution; or they belong to a treatise of surgery, rather than to this place.

Having thus, therefore, delivered the general doctrine, I proceed now to consider the particular genera and species of inflammation.

It has been hinted above (cclxiii.), that the difference of inflammation arises chiefly from the difference of the part affected. I have, therefore arranged them, as they are CUTANEOUS, VISCELAR, OR ARTICULAR; and in this order they are now to be considered.

C H A P. II.

OF INFLAMMATION, MORE STRICTLY CUTANEOUS.

CCLXXIV. CUTANEOUS inflammations are of two kinds, commonly distinguished by the names of PHLEGMON and ERYSIPelas.

Of the latter there are two cases, which ought to be distinguished by different appellations. When the disease is an affection of the skin alone, and very little of the whole system, or when the affection of the system is only symptomatical of the external inflammation, I shall give the disease the name of ERYTHEMA; but when the external inflammation is an exanthema, and symptomatical of an affection of the whole system, I shall then name the disease ERYSIPELAS.

CCLXXV. It is the erythema only that I am to consider here.

For the distinction between Erythema and Phlegmon, I have formerly referred to the characters given of them in our Nosology. See *Synops. Nosolog. Meth.* Vol. II. p. 5. gen. vii. spec. 1. and 2. But I think it proper now to deliver the characters of them more fully and exactly here, as follows :

A Phlegmon is an inflammatory affection of the skin, with a swelling, rising generally to a more considerable eminence in the middle of it ; of a bright red color ; both the swelling and color being pretty exactly circumscribed ; the whole being attended with a pain of distension, often of a stounding or throbbing kind, and frequently ending in suppuration.

An Erythema, Rose, or St. Anthony's Fire, is an inflammatory affection of the skin, with hardly any evident swelling ; of a mixed and not very bright red color, readily disappearing upon pressure, but quickly returning again ; the redness of no regular circumscription, but spreading unequally, and continuing almost constantly

to spread upon the neighboring part, with a pain like to that from burning ; producing blisters, sometimes of a small, sometimes of a larger size ; and always ending in a desquamation of the scarf skin, sometimes in gangrene.

This subject I am not to prosecute here, as properly belonging to surgery, the business of which I am seldom to enter upon in this work ; and shall therefore observe only as necessary here, that the difference of these appearances seems to depend on the different seat of the inflammation. In the phlegmon, the inflammation seems to affect especially the vessels on the internal surface of the skin communicating with the lax subjacent cellular texture ; whence a more copious effusion, and that of serum, convertible into pus, takes place. In the erythema, the inflammation seems to have its seat in the vessels on the external surface of the skin, communicating with the rete mucosum, which does not admit of any effusion, but what separates the cuticle, and gives occasion to the formation of a blister, while the smaller size of the vessels admits only of the effusion of a thin fluid, very seldom convertible into pus.

Besides these differences in the circumstances of these two kinds of inflammation, it is probable that they also differ with respect to their causes. Erythema is the effect of all kinds of acrids externally applied to the skin ; and when arising from an internal cause, it is from an acrimony poured out on the surface of the skin under the cuticle. In the phlegmon, an acrimony is not commonly evident.

CCLXXVI. These differences in the seat and causes of the phlegmon and erythema being admitted, it will be evident, that when an erythema affects any internal part, it can take place in those only whose surfaces are covered with an epithelion, or membrane analogous to the cuticle.

CCLXXVII. The same distinction between the seat and causes of the two diseases will, as I judge, readily explain what has been delivered by practical writers, with respect to the cure of these different cutaneous in-

flammations. But I shall not, however, prosecute this here, for the reason given above (CCLXXV.) ; and, for the same reason, shall not say any thing of the variety of external inflammation, that might otherwise be considered here.

C H A P. III.

OF OPHTHALMIA*, OR INFLAMMATION OF THE EYE.

CCLXXVIII. THE inflammation of the eye may be considered as of two kinds ; according as it has its seat in the membranes of the ball of the eye, when I would name it **OPHTHALMIA MEMBRANARUM** ; or as it has its seat in the sebaceous glands placed in the tarsus, or edges of the eye lids, in which case it may be termed **OPHTHALMIA TARSI**.

These two kinds are very frequently combined together, as the one may readily excite the other ; but they are still to be distinguished according as the one or the other may happen to be the primary affection, and properly as they often arise from different causes.

CCLXXIX. The inflammation of the membranes of the eye affects especially, and most frequently the adnata, appearing in a turgescence of its vessels ; so that the red vessels, which are naturally there, become not only increased in size, but there appear many more than did in a natural state. This turgescence of the vessels is attended with pain, especially upon the motion of the ball of the eye ; and this, like every other irritation applied to the surface of the eye, produces an effusion of tears from the lachrymal gland.

This inflammation commonly, and chiefly affects the adnata spread on the anterior part of the bulb of the

*Redness and pain of the eye, intolerance of light, for the most part accompanied with an effusion of tears.

Species 1. *Ophthalmia Membranarum*. Inflammation in the coats of the eye, in general in the tunica adnata.

Species 2. *Ophthalmia Tarsi*. Tumor, erosion in the edges of the eye-lids, with a glutinous exudation from the tarsus. *Syn. Nes.*

eye; but usually spreads also along the continuation of that membrane on the inside of the palpebræ; and, as that is extended on the tarsus palpebrarum, the excretaries of the sebaceous glands opening there are also frequently affected. When the affection of the adnata is considerable, it is frequently communicated to the subjacent membranes of the eye, and even to the retina itself, which thereby acquires so great a sensibility, that the slightest impression of light becomes painful.

CCLXXX. The inflammation of the membranes of the eye is in different degrees, according as the adnata is more or less affected, or according as the inflammation is either of the adnata alone, or of the subjacent membranes also; and, upon these differences, different species have been established, and different appellations given to them. But I shall not, however, prosecute the consideration of these, being of opinion that all the cases of the Ophthalmia membranarum differ only in degree, and are to be cured by remedies of the same kind more or less employed.

The remote causes of Ophthalmia are many and various; as,

1. External violence, by blows, contusions, and wounds, applied to the eyes; and even very slight impulses applied, whilst the eye lids are open, to the ball of the eye itself, are sometimes sufficient for the purpose.

2. Extraneous bodies introduced under the eye lids, either of an acrid quality, as smoke and other acrid vapors, or of a bulk sufficient to impede the free motion of the eye lids upon the surface of the eye ball.

3. The application of strong light, or even of a moderate light long continued.

4. The application of much heat, and particularly of that with moisture.

5. Much exercise of the eyes in viewing minute objects.

6. Frequent intoxication.

7. Irritation from other and various diseases of the eyes.

8. An acrimony prevailing in the mass of blood, and deposited in the sebaceous glands on the edges of the eye lids.

9. A change in the distribution of the blood, whereby either a more than usual quantity of blood, and with more than usual force, is impelled into the vessels of the head, or whereby the free return of the venous blood from the vessels of the head is interrupted.

10. A certain consent of the eyes with the other parts of the system, whereby, from a certain state of these parts, either a simultaneous, or an alternating affection of the eyes is produced.

CCLXXXI. The proximate cause of Ophthalmia is not different from that of inflammation in general; and the different circumstances of Ophthalmia may be explained by the difference of its remote causes, and by the different parts of the eye which it happens to affect. This may be understood from what has been already said; and I shall now therefore proceed to consider the CURE.

CCLXXXII. In the cure of Ophthalmia, the first attention will be always due to the removing of the remote causes; and the various means necessary for this purpose will be directed by the consideration of these causes enumerated above.

The Ophthalmia membranarum requires the remedies proper for inflammation in general; and when the deeper seated membranes are affected, and especially when a pyrexia is present, large general bleedings may be necessary. But this is seldom the case; as the Ophthalmia, for the most part, is an affection purely local, accompanied with little or no pyrexia. General bleedings, therefore, from the arm or foot, have little effect upon it; and the cure is chiefly to be obtained by topical bleedings, that is blood drawn from vessels near the inflamed part; and opening the jugular vein, or the temporal artery, may be considered as in some measure of this kind. It is commonly sufficient to apply a number of leeches round the eye; and it is perhaps better still to draw blood from the temple by cupping and scarifying. In many cases, a very ef-

factual remedy is, that of scarifying the internal surface of the inferior eye lid; and more so still, is cutting the turged vessels upon the adnata itself.

CCLXXXIII. Besides blood letting, purging, as a remedy suited to inflammation in general, has been considered as peculiarly adapted to inflammations in any of the parts of the head, and therefore to Ophthalmia; and it is sometimes useful; but, for the reasons given before with respect to general bleeding, purging in the case of Ophthalmia, does not prove useful in any degree in proportion to the evacuation excited.

CCLXXXIV. For relaxing the spasm in the part, and taking off the determination of the fluids to it, blistering near the part has commonly been found useful.

CCLXXXV. Electrical sparks taken from the eye will often suddenly discuss the inflammation of the adnata; but the effect is seldom permanent, and even a frequent repetition seldom gives an entire cure.

CCLXXXVI. Ophthalmia, as an exteinal inflammation, admits of topical applications. All those, however, that increase the heat and relax the vevsels of the part, prove commonly hurtful; and the admission of cool air to the eye, the proper application of cold water immediately to the ball of the eye, and the application of various cooling and astringent medicines*, which at the same time do not produce much irritation, prove generally useful: even spiritous liquors, employed in moderate quantity, have often been of service.

* Various collyria may be employed, but some judgment is required in their selection, as what is proper in one state of ophthalmia may be highly improper in another. The following have been considered as the most useful applications:

R_x Alumen. purif. 3 i.
Aq. ros. 3 vi. M.

Vel,

R_x Aq. ammon. acetat.
Aq. ros. 3 i. M.

Vel,

R_x Zinti vitriolat. 3 ss.
Camphoræ, gr. x,
Aq. fe ven. 3 vi.

The vitriolated zinc & camphor are to be rubbed together, the water is then poured on, and the clear liquor separated by filtration.

M. Wrie has found, that dropping into the eye a drop or two of the laic tincture once or twice a day, is often of eminent service.

CCLXXXVII. In the cure of Ophthalmia, much care is requisite to avoid all irritation, particularly that of light ; and the only safe and certain means of doing this, is by confining the patient to a very dark chamber.

CCLXXXVIII. These are the remedies of the Ophthalmia membranarum ; and in the Ophthalmia tarsi, so far as it is produced by the Ophthalmia membranarum, the same remedies may be necessary. As however the Ophthalmia tarси may often depend upon an acrimony deposited in the sebaceous glands of the part, so it may require various internal remedies, according to the nature of the acrimony in fault ; for which I must refer to the consideration of scrophula, syphilis, or other diseases with which this Ophthalmia may be connected : and when the nature of the acrimony is not ascertained, certain remedies, more generally adapted to the evacuation of acrimony, such for instance, as mercury, may be employed.

CCLXXXIX. In the Ophthalmia tarsi, it almost constantly happens that some ulcerations are formed on the tarsus. These require the application of mercury* or copper, either of which may by itself sometimes entirely cure the affection ; and these may even be useful when the disease depends upon a fault of the whole system.

CCXC. Both in the Ophthalmia membranarum, and in the Ophthalmia tarsi, it is necessary to obviate that gluing or sticking together of the eyelids which commonly happens in sleep ; and this may be done by in-

* In cases of this nature, the unguentum hydrargyri nitrati is often applied with singular advantage ; in cases likewise attended with ulceration of the cornea, or where an opacity is threatened, much benefit has been derived from its application. A small quantity of it is inserted into the angle of the eye, when the patient goes to sleep.

Sir Hans Sloan powerfully recommends the unguentum tutiae, and the fulohate of zinc rubbed with butter.

The following ointment is recommended by Mr. Bell :

R^c Hyd. nitrat. rub.

Lapidis calam. præp. à 3 ij. S.

Lythar. lævigat. 3 i.

Tutiae præp. 3 ss.

Hyd. sulphurati rub. 3 i.

Balsam. Peruvian. gr. xv.

Adipis suillæ præp. 3 ij. M.

uating a little of any mild unctuous medicine of some tenacity between the eye lids before the patient shall go to sleep.

C H A P. IV.

OF PHRENSY, OR PHRENITIS*.

ccxcI. THIS disease is an inflammation of the parts contained in the cavity of the cranium ; and may affect either the membranes of the brain, or the substance of the brain itself. Nosologists have apprehended that these two cases might be distinguished by different symptoms, and therefore by different appellations : but this does not seem to be confirmed by observation and dissection ; and therefore I shall treat of both cases under the title of Phrensy, or Phrenitis.

ccxcII. An idiopathic phrensy is a rare occurrence, a sympathetic more frequent ; and the ascertaining either the one or the other is, upon many occasions, difficult. Many of the symptoms by which the disease is most commonly judged to be present, have appeared, when, from certain considerations it was presumed, and even from dissection it appeared, that there had been no internal inflammation ; and, on the other hand, dissections have shown that the brain had been inflamed, when few of the peculiar symptoms of phrensy had before appeared.

ccxcIII. The symptoms by which this disease may be most certainly known are, a vehement pyrexia, a violent deep seated headach, a redness and turgescence of the face and eyes, an impatience of light or noise, a constant watching, and a delirium impetuous and furious. Some nosologists have thought these symptoms peculiar to an inflammation of the membranes, and that

* Violent pyrexia, pain of the head, redness of the face and eyes, intolerance of light and sound, watchfulness, violent delirium, or typhomania.
Syn. Nys.

the inflammation of the substance of the brain was to be distinguished by some degree of coma attending it. It was for this reason that in the Nosology I added the Typhomania to the character of Phrenitis : but, upon farther reflection, I find no proper foundation for this ; and, if we pass from the characters above delivered, there will be no means of fixing the variety that occurs.

I am here, as in other analogous cases, of opinion, that the symptoms above mentioned of an acute inflammation, always mark inflammations of membranous parts ; and that an inflammation of the parochyma or substance of viscera, exhibits, at least commonly, a more chronic affection.

ccxciv. The remote causes of phrensy, are all those which directly stimulate the membranes, or substance of the brain ; and particularly all those which increase the impetus of the blood in the vessels of the brain. Among these the exposure of the naked head to the direct rays of a very warm sun, is a frequent cause. The passions of the mind, and certain poisons, are amongst the remote causes of phrensy ; but in what manner they operate, is not well understood.

ccxcv. The cure of phrensy is the same with that of inflammation in general ; but in phrensy the most powerful remedies are to be immediately employed. Large and repeated blood letting is especially necessary ; and the blood should be drawn from vessels as near as possible to the part affected. The opening of the temporal artery has been recommended, and with some reason : but the practice is attended with inconvenience ; and I apprehend, that opening the jugular veins may prove more effectual ; but, at the same time, it will be generally proper to draw blood from the temples by cupping and scarifying.

ccxcvi. It is probable that purging, as it may operate by revulsion, may be of more use in this than in some other inflammatory affections.

For the same purpose of revulsion, warm pediluvia are a remedy ; but at the same time somewhat ambigu-

ous. The taking off the force of the blood in the vessels of the head by an erect posture, is generally useful.

ccxcvii. Shaving of the head is always proper and necessary for the admission of other remedies. Blistering is commonly useful in this disease, but chiefly when applied near to the part affected.

ccxcviii. Every part of the antiphlogistic regimen is here necessary, and particularly the admission of cold air. Even cold substances, applied close to the head, have been found safe and highly useful; and the application of such refrigerants as vinegar, is certainly proper.

ccxcix. It appears to me certain, that opiates are hurtful in every inflammatory state of the brain; and it is to be observed, that from the ambiguity mentioned in ccxcii. the accounts of practitioners, with regard to the juvantia and lœdentina in this disease, are of very uncertain application.

C H A P. V.

OF THE QUINSY, OR CYNANCHE.

ccc. This name is applied to every inflammation of the internal fauces; but these inflammations are different, according to the part of the fauces which may be affected, and according to the nature of the inflammation. In the Nosophy, therefore, after giving the character of the Cynanche as a genus*, I

* Gen. Pyrexia sometimes inclining to typhus; redness and pain of the fauces; swallowing and breathing difficult; with a sense of straitness in the fauces.

Species 1. Cynanche (*tonfillaris.*) Affecting the mucous membrane of the fauces, and particularly the tonsils, with redness and swelling, attended with synoche.

Species 2. Cynanche (*Maligna.*) Affecting the tonsils and mucous membrane of the fauces, with swelling and redness, and with spreading mucous crusts of a whitish or ash color, and covering ulcers; typhus, fever, and eruption.

Species 3. Cynanche (*trachealis.*) Difficult respiration, whizzing inspiration, hoarseness of the voice, hollow cough, very slight swelling appearing in the fauces, deglutition little impeded, ana synoche.

have distinguished five different species, which must here likewise be separately considered.

SECT. I. *Of the Cynanche Tonsillaris.*

ccc*i.* This is an inflammation of the mucous membrane of the fauces, affecting especially that congeries of mucous follicles which forms the tonsils, and spreading from thence along the velum and uvula, so as frequently to affect every part of the mucous membrane.

ccc*ii.* The disease appears by some tumor, sometimes considerable, and by a redness of the parts; is attended with a painful and difficult deglutition; with a pain sometimes shooting into the ear; with a troublesome clamminess of the mouth and throat; with a frequent, but difficult excretion of mucous; and the whole is accompanied with a pyrexia.

ccc*iii.* This species of quinsy is never contagious. It terminates frequently by resolution, sometimes by suppuration, but hardly ever by gangrene; although in this disease some sloughy spots, commonly supposed to be forerunners of gangrene, sometimes appear upon the fauces.

ccc*iv.* This disease is commonly occasioned by cold externally applied, particularly about the neck. It affects especially the young and sanguine, and a disposition to it is often acquired by habit; so that from every considerable application of cold to any part of the body this disease is readily induced. It occurs especially in spring and autumn, when vicissitudes of heat and cold frequently take place. The inflammation and tumor are commonly at first most considerable in one tonsil; and afterwards, abating in that, increase in the other.

ccc*v.* In the cure of this inflammation, some bleeding may be proper; but large general bleedings will seldom be necessary. The opening of the ranular veins

Species 4. *Cynanche (pharyngea.)* Redness, particularly in the lower part of the fauces, deglutition very difficult and painful, respiration tolerably easy, and synoeca.

Species 5. *Cynanche (parotidea.)* Large external tumor of the parotids and maxillary glands; respiration and deglutition little impaired, and gentle synoeca.

seems to be an insignificant remedy ; and leeches set upon the external fauces are of more efficacy.

cccvi. At the beginning of the disease, full vomiting has been frequently found to be of great service.

cccvii. This inflammation may be often relieved by moderate astringents and particularly by acids applied to the inflamed parts*. In many cases, however, nothing has been found to give more relief than the vapor of warm water received into the fauces by a proper apparatus.

cccviii. The other remedies of this disease are rubefacient or blistering medicines †, applied externally to the neck ; and with these, the employment of antiphlogistic purgatives, as well as every part of the antiphlogistic regimen, excepting the application of cold.

cccix. This disease, as we have said, often terminates by resolution, frequently accompanied with sweating ; which is therefore to be prudently favored and encouraged.

cccx. When this disease shall have taken a tendency to suppuration, nothing will be more useful than the frequent taking into the fauces the steams of warm water. When the abscess is attended with much swelling, if it break not spontaneously, it should be opened by a lancet ; and this does not require much caution, as even the inflammatory state may be relieved by some scarification of the tonsils. I have never had occasion to see any case requiring bronchotomy.

SECT. II. *Of the Cynanche Maligna.*

cccxi. This is a contagious disease, seldom sporadic, and commonly epidemic. It attacks persons of all ages, but more commonly those in a young and infant state.

* The infusum rosarum, with or without a few drops of vitriolic acid, is a proper gargle on this occasion.

† No where are the advantages derived from blisters more conspicuous, than in this complaint ; but their efficacy greatly depends on their early application, as this inflammation very speedily runs on to suppuration. When rubefacients only are thought proper, the volatile camphorated liniment or the following will answer,

R. Ol. Oliv. 3 i.

Sp. cor. cer, 3 fl. M.

It attacks persons of every constitution, when exposed to the contagion, but most readily the weak and infirm.

cccxii. This disease is usually attended with a considerable pyrexia ; and the symptoms of the accession of this, such as frequent cold shiverings, sickness, anxiety, and vomiting, are often the first appearances of the disease. About the same time, a stiffness is felt in the neck, with some uneasiness in the internal fauces, and some hoarseness of the voice. The internal fauces, when viewed, appear of a deep red color, with some tumor ; but this last is seldom considerable, and deglutition is seldom difficult or painful. Very soon a number of white or ash colored spots appear upon the inflamed parts. These spots spread and unite, covering almost the whole fauces with thick sloughs ; which falling off, discover ulcerations. While these symptoms proceed in the fauces, they are generally attended with a coryza, which pours out a thin acrid and fetid matter, excoriating the nostrils and lips. There is often also, especially in infants, a frequent purging ; and a thin acrid matter flows from the anus, excoriating this and the neighboring parts.

cccxiii. With these symptoms, the pyrexia proceeds with a small, frequent, and irregular pulse ; and there occurs a manifest exacerbation every evening, and some remission in the mornings. A great debility appears in the animal functions ; and the sensorium is affected with delirium, frequently with coma.

cccxiv. On the second day, or sometimes later, efflorescences appear upon the skin, which are sometimes in small points hardly eminent ; but, for the most part, in patches of a red color, spreading and uniting so as to cover the whole skin. They appear first about the face and neck, and in the course of some days spread by degrees to the lower extremities. The scarlet redness is often considerable on the hands and extremities of the fingers, which feel stiff and swelled. This eruption is often irregular, as to the time of its appearance, as to its steadiness, and as to the time of its duration. It usually continues four days, and goes off by some desquamation of

the cuticle ; but neither on its first appearance, nor on its desquamation, does it always produce a remission of the pyrexia, or of the other symptoms.

cccxv. The progress of the disease depends on the state of the fauces and of the pyrexia. When the ulcers on the fauces, by their livid and black color, by the fetor of the breath, and by many marks of acrimony in the fluids, show a tendency to gangrene, this takes place to a considerable degree ; and, the symptoms of a putrid fever constantly increasing, the patient dies, often on the third day, sometimes later, but for the most part before the seventh. The acrimony poured out from the diseased fauces must necessarily, in part, pass into the pharynx, and there spread the infection into the œsophagus, and sometimes through the whole of the alimentary canal, propagating the putrefaction, and often exhausting the patient by a frequent diarrhoea.

The acrid matter poured out in the fauces being again absorbed, frequently occasions large swellings of the lymphatic glands about the neck, and sometimes to such a degree as to occasion suffocation.

It is seldom that the organs of respiration escape entirely unscurt, and very often the inflammatory affection is communicated to them. From dissections, it appears, that, in the Cynanche maligna, the larynx and trachea are often affected in the same manner as in the Cynanche trachealis ; and it is probable, that in consequence of that affection, the Cynanche maligna often proves fatal by such a sudden suffocation as happens in the proper Cynanche trachealis ; but there is reason to suspect, that upon this subject dissectors have not always distinguished properly between the two diseases.

cccxvi. These are the several fatal terminations of the Cynanche maligna ; but they do not always take place. Sometimes the ulcers of the fauces are of a milder nature ; and the fever is more moderate, as well as of a less putrid kind. And when, upon the appearance of the efflorescence on the skin, the fever suffers a remission ; when the efflorescence continues for three or four days, till it has spread over the whole body, and then

ends by a disquamation, giving a further remission of the fever ; this often entirely terminates, by gentle sweats, on or before the seventh day ; and the rest of the disease terminates in a few days more, by an excretion of sloughs from the fauces, while sleep, appetite, and the other marks of health, return.

From what is said in this and the preceding paragraph, the prognostics in this disease may be readily learned.

cccxvii. In the cure of this disease, its septic tendency is chiefly to be kept in view. The debility, with which it is attended, renders all evacuations by bleeding and purging improper, except in a few instances where the debility is less, and the inflammatory symptoms more considerable. The fauces are to be preserved from the effects of the acrid matter poured out upon them, and are therefore to be frequently washed out by antiseptic gargles* or injections ; and the septic tendency

* The advantages derived from detergent and stimulating gargles, by their removing the acid matter, and obviating the tendency to gangrene, must be evident to every one. Frequently washing the parts with an infusion of bark in port wine, is as effectual as most others. The following, likewise, may be used as gargles :

R. Deco^t. cinch. 3 vi.

Acid. sulphur. dilut. 3 i.

Mellis rosæ, 3 i.

Vel,

R. Deco^t. cinch. 3 vi.

Tinct. myrrhæ, 3 fl.

Mel. ros. 3 i.

Acid. sulphur. q. s. ad. grat. acid.

When the patients are unable to use the gargle themselves, it must be thrown in by a syringe, or a sponge soaked with it may be applied to the part affected.

It is often impossible to prevail upon children (who very frequently labor under this disease) to take the bark in powder. In such cases, a decoction of the bark, sweetened with extract of liquorice, with the addition of a small quantity of spirituous cinnamon water, is recommended by Dr. Clark. Dr. Fothergill, to whom we are indebted for the first accurate description of this disease, observes, that when other means have failed, two or three drachms of the bark have been given to young children, in three or four ounces of broth, as a clyster.

The capsicum has been highly extolled in *cynanche maligna*, and many cases are related where it was exhibited with the best effects. Two table spoon fulls of small red pepper, or three of Cayenne pepper, and two tea spoon fulls of fine salt, are directed to be beat into a paste, upon which half a pint of boiling water is poured, and strained off when cold : To this liquor a equal quantity of very sharp vinegar is to be added. A table spoon full of this is a proper dose for an adult. See *Med. Commentaries*, Vol. XII. This remedy, however, requires a more ample experience, before it can be recommended to general use.

cy of the whole system should be guarded against and corrected by internal antiseptics, especially by the Peruvian bark given in substance, from the beginning, and continued through the course of the disease. Emetics, both by vomiting and nauseating, prove useful, especially when employed early in the disease. When any considerable tumor occurs, blisters applied externally will be of service, and in any case may be fit to moderate the internal inflammation..

SECT. III. *Of the Cynanche Trachealis.*

cccxviii. This name has been given to an inflammation of the glottis, larynx, or upper part of the trachea, whether it affect the membranes of these parts, or the muscles adjoining. It may arise first in these parts, and continue to subsist in them alone; or it may come to affect these parts from the Cynanche tonsillaris or maligna spreading into them.

cccxix. In either way it has been a rare occurrence, and few instances of it have been marked and recorded by physicians. It is to be known by a peculiar ringing found of the voice, by difficult respiration, with a sense of straitening about the larynx, and by a pyrexia attending it.

cccxx. From the nature of these symptoms, and from the dissection of the bodies of persons who had died of this disease, there is no doubt of its being of an inflammatory nature. It does not, however, always run the course of inflammatory affections, but frequently produces such an obstruction of the passage of the air, as suffocates, and thereby proves suddenly fatal.

cccxxi. If we judge rightly of the nature of this disease, it will be obvious, that the cure of it requires the most powerful remedies of inflammation, to be employed upon the very first appearance of the symptoms. When a suffocation is threatened, whether any remedies can be employed to prevent it, we have not had experience to determine.

cccxxii. The accounts which books have hitherto given us of inflammations of the larynx, and the parts

connected with it, amount to what we have now said ; and the instances recorded have almost all of them happened in adult persons ; but there is a peculiar affection of this kind happening especially to infants, which till lately has been little taken notice of. Dr. Home is the first who has given any distinct account of it ; but, since he wrote, several other authors have taken notice of it, (see MICHAELIS *De angina polyposa sive membranacea, Argentorati 1778*;) and have given different opinions with regard to it. Concerning this diversity of opinions, I shall not at present inquire ; but shall deliver the history and cure of this disease, in so far as these have arisen from my own observation, from that of Dr. Home, and of other skilful persons in this neighborhood.

cccxxiii. This disease seldom attacks infants till after they have been weaned. After this period, the younger they are, the more they are liable to it. The frequency of it becomes less as children become more advanced ; and there are no instances of children above twelve years of age being affected with it. It attacks children of the midland countries, as well as those who live near the sea. It does not appear to be contagious, and its attacks are frequently repeated in the same child. It is often manifestly the effect of cold applied to the body ; and therefore appears most frequently in the winter and spring seasons. It very commonly comes on with the ordinary symptoms of a catarrh ; but sometimes the peculiar symptoms of the disease show themselves at the very first.

cccxxiv. These peculiar symptoms are the following : A hoarseness, with some shrillness and ringing sound, both in speaking and coughing, as if the noise came from a brazen tube. At the same time, there is a sense of pain about the larynx, some difficulty of respiration, with a whizzing sound in inspiration, as if the passage of the air were straitened. The cough which attends it is commonly dry, and, if any thing be spit up, it is a matter of a purulent appearance, and sometimes films resembling portions of a membrane. Together with these symptoms, there is a frequency of pulse, a restless-

ness, and an uneasy sense of heat. When the internal fauces are viewed, they are sometimes without any appearance of inflammation ; but frequently a redness, and even swelling, appear ; and sometimes in the fauces, there is an appearance of matter like to that rejected by coughing. With the symptoms now described, and particularly with great difficulty of breathing, and a sense of strangling in the fauces, the patient is sometimes suddenly taken off.

cccxxv. There have been many dissections made of infants who had died of this disease, and almost constantly there has appeared a preternatural membrane lining the whole internal surface of the upper part of the trachea, and extending in the same manner downwards into some of its ramifications. This preternatural membrane may be easily separated, and sometimes has been found separated in part, from the subjacent proper membrane of the trachea. This last is commonly found entire, that is, without any appearance of erosion or ulceration ; but it frequently shows the vestiges of inflammation, and is covered by a matter resembling pus, like to that rejected by coughing ; and very often a matter of the same kind is found in the bronchiæ, sometimes in considerable quantity.

cccxxvi. From the remote causes of this disease ; from the catarrhal symptoms commonly attending it ; from the pyrexia constantly present with it ; from the same kind of preternatural membrane being found in the trachea, when the cynanche maligna is communicated to it ; and from the vestiges of inflammation on the trachea, discovered upon dissection, we must conclude, that the disease consists in an inflammatory affection of the mucous membrane of the larynx and trachea, producing an exudation analogous to that found on the surface of inflamed viscera, and appearing partly in a membranous crust, and partly in a fluid resembling pus.

cccxxvii. Though this disease manifestly consists in an inflammatory affection, it does not commonly end either in suppuration or gangrene. The peculiar and troublesome circumstance of the disease seems to consist in a

+ spasm of the muscles of the glottis, which, by inducing a suffocation, prevents the common consequences of inflammation.

cccxxviii. When this disease terminates in health, it is by a resolution of the inflammation, by a ceasing of the spasm of the glottis, by an expectoration of the matter exuding from the trachea, and of the crusts formed there; and frequently it ends without any expectoration, or at least with such only as attends an ordinary catarrh.

cccxxix. When the disease ends fatally, it is by a suffocation, seemingly, as we have said, depending upon a spasm affecting the glottis; but sometimes, probably, depending upon a quantity of matter filling the bronchia.

cccxxx. As we suppose the disease to be an inflammatory affection, so we attempt the cure of it by the usual remedies of inflammation, and which, for the most part, I have found effectual. Bleeding, both general and topical, has often given immediate relief, and by being repeated, has entirely cured the disease. Blistering also, near to the part affected, has been found useful. Upon the first attack of the disease, vomiting, immediately after bleeding, seems to be of considerable use, and sometimes suddenly removes the disease. In every stage of the disease, the antiphlogistic regimen is necessary, and particularly the frequent use of laxative clysters. Though we suppose that a spasm affecting the glottis is often fatal in this disease, I have not found antispasmodic medicines to be of any use.

SECT. IV. *Of the Cynanche Pharyngæa.*

cccxix. In the Cynanche Tonsillaris, the inflammation of the mucous membrane often spreads upon the pharynx, and into the beginning of the œsophagus, and thereby renders deglutition more difficult and uneasy: but such a case does not require to be distinguished as a different species from the common Cynanche tonsillaris, and only requires that blood letting, and other remedies, should be employed with greater diligence.

than in ordinary cases. We have never seen any case in which the inflammation began in the pharynx, or in which this part alone was inflamed ; but practical writers have taken notice of such a case ; and to them, therefore, I must refer, both for the appearances which distinguish it, and for the method of cure.

SECT. V. *Of the Cynanche Parotidæa.*

cccxxxii. This is a disease known to the vulgar, and among them has got a peculiar appellation, in every country of Europe ; but has been little taken notice of by medical writers. It is often epidemic, and manifestly contagious. It comes on with the usual symptoms of pyrexia, which is soon after attended with a considerable tumor of the external fauces and neck. This tumor appears first as a glandular moveable tumor at the corner of the lower jaw ; but the swelling soon becomes uniformly diffused over a great part of the neck, sometimes on one side only, but more commonly on both. The swelling continues to increase till the fourth day : but from that period it declines, and in a few days more passes off entirely. As the swelling of the fauces recedes, some tumor affects the testicles in the male sex, or the breasts in the female. These tumors are sometimes large, hard, and somewhat painful ; but, in this climate, are seldom either very painful or of long continuance. The pyrexia attending this disease is commonly slight, and recedes with the swelling of the fauces ; but sometimes, when the swelling of the testicles does not succeed to that of the fauces, or when the one or the other has been suddenly repressed, the pyrexia becomes more considerable, is often attended with delirium, and has sometimes proved fatal.

cccxxxiii. As this disease commonly runs its course without either dangerous or troublesome symptoms, so it hardly requires any remedies. An antiphlogistic regimen, and avoiding cold, are all that will be commonly necessary. But when, upon the receding of the swellings of the testicles in males, or of the breasts in fe-

males, the pyrexia comes to be considerable, and threatens an affection of the brain, it will be proper, by warm fomentations, to bring back the swelling ; and by vomiting, bleeding or blistering, to obviate the consequences of its absence.

C H A P. VI.

OF PNEUMONIA*, OR PNEUMONIC INFLAMMATION.

^{cccxxxiv.} **U**NDER this title I mean to comprehend the whole of the inflammations affecting either the viscera of the thorax, or the membrane lining the interior surface of that cavity : for neither do our diagnostics serve to ascertain exactly the seat of the disease, nor does the difference in the seat of the disease exhibit any considerable variation in the state of the symptoms, nor lead to any difference in the method of cure.

^{cccxxxv.} Pneumonic inflammation, however various in its seat, seems to me to be always known and distinguished by the following symptoms : Pyrexia, difficult breathing, cough, and pain in some part of the thorax. But these symptoms are, on different occasions, variously modified.

^{cccxxxvi.} The disease almost always comes on with a cold stage, and is accompanied with the other symptoms of pyrexia ; though, in a few instances, the pulse may not be more frequent, nor the heat of the body increased beyond what is natural. Sometimes the pyrexia is from the beginning accompanied with the other symptoms ; but frequently it is formed for some hours before the other symptoms become considerable, and particularly before the pain be felt. For the most part, the pulse is frequent, full, strong, hard, and quick ; but in a few instances, especially in the advanced state of the disease, the pulse is weak and soft, and at the same time irregular.

* Pyrexia, pain in some part of the thorax, difficult respiration, and cough.
Syn. Nof.

cccxxxvii. The difficulty of breathing is always present, and most considerable in inspiration ; both because the lungs do not easily admit of a full dilatation, and because the dilatation aggravates the pain attending the disease. The difficulty of breathing is also greater when the patient is in one posture of his body rather than another. It is generally greater when he lies upon the side affected ; but sometimes the contrary happens. Very often the patient cannot lie easy upon either side, finding ease only when lying on his back ; and sometimes he cannot breathe easily, except when in somewhat of an erect posture.

cccxxxviii. A cough always attends this disease ; but, in different cases, is more or less urgent and painful. It is sometimes dry, that is without any expectoration, especially in the beginning of the disease : but more commonly it is, even from the first, moist, and the matter spit up, various both in consistence and color ; and frequently it is streaked with blood.

cccxxxix. The pain attending this disease is, in different cases, felt in different parts of the thorax, but most frequently in one side. It has been said to affect the right side more frequently than the left ; but this is not certain ; while, on the other hand, it is certain that the left side has been very often affected. The pain is felt sometimes as if it were under the sternum ; sometimes in the back, between the shoulders ; and, when in the sides, its place has been higher or lower, more forward or backward : but the place of all others most frequently affected, is about the sixth or seventh rib, near the middle of its length, or a little more forward. The pain is often severe and pungent ; but sometimes more dull and obtuse, with a sense of weight rather than of pain. It is most especially severe and pungent when occupying the place last mentioned. For the most part it continues fixed in one place ; but sometimes shoots from the side to the scapula on one hand, or to the sternum and clavicle on the other.

cccxl. The varying state of symptoms now mentioned, does not always ascertain precisely the seat of the

disease. To me it seems probable, that the disease is always seated, or at least begins, in some part of the pleura ; taking that membrane in its greatest extent, as now commonly understood ; that is, as covering not only the internal surface of the cavity of the thorax, but also as forming the mediastinum, and as extended over the pericardium, and over the whole surface of the lungs.

cccxli. There is, therefore, little foundation for distinguishing this disease by different appellations taken from the part which may be supposed to be chiefly affected. The term Pleurify, might with propriety be applied to every case of the disease ; and has been very improperly limited to that inflammation which begins in, and chiefly affects the *pleura costalis*. I have no doubt that such a case does truly occur : but, at the same time, I apprehend it to be a rare occurrence ; and that the disease much more frequently begins in, and chiefly affects the pleura investing the lungs, producing all the symptoms supposed to belong to what has been called the *Pleuritis vera*.

cccxlII. Some physicians have imagined, that there is a case of pneumonic inflammation particularly entitled to the appellation of *Peripneumony* ; and that is, the case of an inflammation beginning in the parenchyma or cellular texture of the lungs, and having its seat chiefly there. But it seems to me very doubtful, if any acute inflammation of the lungs, or any disease which has been called Peripneumony, be of that kind. It seems probable, that every acute inflammation begins in membranous parts ; and in every dissection of persons dead of peripneumony, the external membrane of the lungs, or some part of the pleura, has appeared to have been considerably affected.

cccxlIII An inflammation of the pleura covering the upper surface of the diaphragm, has been distinguished by the appellation of *Paraphrenitis*, as supposed to be attended with the peculiar symptoms of delirium, risus sardonicus, and other convulsive motions : But it is certain, that an inflammation of that portion of the pleura, and affecting also even the muscular substance

of the diaphragm, has often taken place without any of these symptoms; and I have not met with either dissections, or any accounts of dissections, which support the opinion, that an inflammation of the pleura covering the diaphragm, is attended with delirium more commonly than any other pneumonic inflammation.

cccxliv. With respect to the seat of pneumonic inflammation, I must observe further, that although it may arise and subsist chiefly in one part of the pleura only, it is however frequently communicated to other parts of the same, and commonly communicates a morbid affection through its whole extent.

cccxl.v. The remote cause of pneumonic inflammation, is, commonly, cold applied to the body, obstructing perspiration, and determining to the lungs; while at the same time the lungs themselves are exposed to the action of cold. These circumstances operate especially when an inflammatory diathesis prevails in the system; and consequently upon persons of the greatest vigor; in cold climates; in the winter season; and particularly in the spring, when vicissitudes of heat and cold are frequent. The disease, however, may arise in any season when such vicissitudes occur.

Other remote causes also may have a share in this matter; such as every means of obstructing, straining, or otherwise injuring the pneumonic organs.

Pneumonic inflammation may happen to persons of any age, but rarely to those under the age of puberty: and most commonly it affects persons somewhat advanced in life as those between forty five and sixty years; those too especially of a robust and full habit.

The pneumonic inflammation has been sometimes so much an epidemic, as to occasion a suspicion of its depending upon a specific contagion; but I have not met with any evidence in proof of this. See Morgagni de causis et scdibus morborum, epist. xxi. art. 26.

cccxlvi. The pneumonic, like other inflammations, may terminate by solution, suppuration, or gangrene: but it has also a termination peculiar to itself, as has been hinted above (cclix.); and that is, when it is at-

tended with an effusion of blood into the cellular texture of the lungs, which soon interrupting the circulation of the blood through this viscus, produces a fatal suffocation. This indeed seems to be the most common termination of pneumonic inflammation when it ends fatally; for, upon the dissection of almost every person dead of the disease, it has appeared that such an effusion had happened.

cccxlviij. From these dissections also we learn, that pneumonic inflammation commonly produces an exudation from the internal surface of the pleura; which appears partly as a soft viscid crust, often of a compact, membranous form, covering every where the surface of the pleura, and particularly those parts where the lungs adhere to the pleura costalis, or mediastinum; and this crust seems always to be the cement of such adhesions.

The same exudation shows itself also, by a quantity of a serous whitish fluid, commonly found in the cavity of the thorax; and some exudation or effusion is usually found to have been made likewise into the cavity of the pericardium. *also a crust*.

cccxlviii. It seems probable too, that a like effusion is sometimes made into the cavity of the bronchia: for, in some persons who have died after laboring under a pneumonic inflammation for a few days only, the bronchia have been found filled with a considerable quantity of a serous and thickish fluid; which, I think, must be considered rather as the effusion mentioned, having had its thinner parts taken off by respiration, than as a pus so suddenly formed in the inflamed part.

cccxlix. It is however not improbable, that this effusion, as well as that made into the cavities of the thorax and pericardium, may be a matter of the same kind with that which, in other inflammations, is poured into the cellular texture of the parts inflamed, and there converted into pus; but in the thorax and pericardium, it does not always assume that appearance, because the crust covering the surface prevents the absorption of the thinner part. This absorption, however, may be compensated in the bronchia by the drying power of the

air ; and therefore the effusion into them may put on a more purulent appearance.

In many cases of pneumonic inflammation, when the SPUTA are very copious, it is difficult to suppose that the whole of them proceed from the mucous follicles of the bronchiæ. It seems more probable, that a great part of them may proceed from the effused serous fluid we have been mentioning ; and this too will account for the sputa being so often of a purulent appearance. Perhaps the same thing may account for that purulent expectoration, as well as that purulent matter found in the bronchiæ, which the learned Mr. de Haen says he had often observed, when there was no ulceration of the lungs ; and this explanation is at least more probable, than Mr. de Haen's supposition of a pus formed in the circulating blood.

CCCL. To conclude this subject, it would appear, that the effusion into the bronchiæ, which we have mentioned, often concurs with the effusion of red blood in occasioning the suffocation, which fatally terminates pneumonic inflammation ; that the effusion of serum alone may have this effect ; and that the serum poured out in a certain quantity, rather than any debility in the powers of expectoration, is the cause of that ceasing of expectoration which very constantly precedes the fatal event ; for, in many cases, the expectoration has ceased, when no other symptoms of debility have appeared, and when, upon dissection, the bronchiæ have been found full of liquid matter. Nay, it is even probable, that, in some cases, such an effusion may take place, without any symptoms of violent inflammation ; and, in other cases, the effusion taking place, may seem to remove the symptoms of inflammation which had appeared before, and thus account for those unexpected fatal terminations which have sometimes happened. Possibly this effusion may account also for many of the phenomena of the peripneumonia Notha.

CCCLI. Pneumonic inflammation seldom terminates by resolution, without being attended with some evident evacuation. An haemorrhagy from the nose, hap-

pening upon some of the first days of the disease, has sometimes put an end to it ; and it is said that an evacuation from the hemorrhoidal veins, a bilious evacuation by stool, and an evacuation of urine, with a copious sediment, have severally had the same effect ; but such occurrences have been rare and unusual.

The evacuation most frequently attending, and seeming to have the greatest effect in promoting resolution, is an expectoration of a thick, white or yellowish matter, a little streaked with blood, copious, and brought up without either much or violent coughing.

Very frequently the resolution of this disease is attended with, and perhaps produced by a sweat, which is warm, fluid, copious over the whole body, and attended with an abatement of the frequency of the pulse, of the heat of the body, and of other febrile symptoms.

CCCLII. The prognostics in this disease are formed from observing the state of the principal symptoms.

A violent pyrexia is always dangerous.

The danger, however is chiefly denoted by the difficulty of breathing. When the patient can lie on one side only ; when he can lie on neither side, but upon his back only ; when he cannot breathe with tolerable ease, except the trunk of his body be erect ; when, even in this posture, the breathing is very difficult, and attended with a turgescence and flushing of the face, together with partial sweats about the head and neck, and an irregular pulse ; these circumstances mark the difficulty of breathing in progressive degrees, and, consequently, in proportion, the danger of the disease.

A frequent violent cough aggravating the pain, is always the symptom of an obstinate disease.

As I apprehend that the disease is hardly ever resolved, without some expectoration ; so a dry cough must be always an unfavorable symptom.

As the expectoration formerly described, marks that the disease is proceeding to a resolution ; so an expectoration, which has not the conditions there mentioned, must denote at least a doubtful state of the disease ; but

the marks taken from the color of the matter, are for the most part fallacious.

An acute pain, very much interrupting inspiration, is always the mark of a violent disease ; though not of one more dangerous, than an obtuse pain, attended with very difficult respiration.

When the pains, which at first had affected one side only, have afterwards spread into the other ; or when, leaving the side first affected, they entirely pass into the other ; these are always marks of an increasing, and therefore, of a dangerous disease.

A delirium coming on during a pneumonic inflammation, is constantly a symptom denoting much danger.

CCCLIII. When the termination of this disease proves fatal, it is on one or other of the days of the first week, from the third to the seventh. This is the most common case ; but, in a few instances, death has happened at a later period of the disease.

When the disease is violent, but admitting of resolution, this also happens frequently in the course of the first week ; but, in a more moderate state of the disease, the resolution is often delayed to the second week.

The disease, on some of the days from the third to the seventh, generally suffers a remission, which, however, may be often fallacious, as the disease does sometimes return again with as much violence as before, and then with great danger.

Sometimes the disease disappears on the second or third day, while an erysipelas makes its appearance on some external part, and if this continue fixed, the pneumonic inflammation does not recur.

CCCLIV. Pneumonia, like other inflammations often ends in suppuration or gangrene.

CCCLV. When a pneumonia, with symptoms neither very violent nor very slight, has continued for many days, it is to be feared it will end in a suppuration. This however, is not to be determined precisely by the number of days ; for, not only after the fourth, but even after the tenth day, there have been examples of a pneumonia ending by a resolution ; and, if the disease has

suffered some intermission, and again recurred, there may be instances of a resolution happening at a much later period from the beginning of the disease, than that just now mentioned.

CCCLVI. But if a moderate disease, in spite of proper remedies employed, be protracted to the fourteenth day, without any considerable remission, a suppuration is pretty certainly to be expected ; and it will be still more certain, if no signs of resolution have appeared, or if an expectoration which had appeared shall have again ceased, and the difficulty of breathing has continued or increased, while the other symptoms have rather abated.

CCCLVII. That in a pnemonia, the effusion is made, which may lay the foundation of a suppuration, we conclude, from the difficulty of breathing becoming greater when the patient is in a horizontal posture, or when he can lie more easily upon the affected side.

CCCLVIII. That, in such cases, a suppuration has actually begun, may be concluded from the patient's being frequently affected with slight cold shiverings, and with a sense of cold, felt sometimes in one and sometimes in another part of the body. We form the same conclusion also from the state of the pulse, which is commonly less frequent and softer, but sometimes quicker and fuller, than before.

CCCLIX. That a suppuration is already formed, may be inferred from there being a considerable remission of the pain, which had before subsisted, while, alongst with this, the cough, and especially the dyspnœa, continue, and are rather augmented. At the same time, the frequency of the pulse is rather increased, the feverish state suffers considerable exacerbations every evening, and, by degrees, a hectic, in all its circumstances, comes to be formed.

CCCLX. The termination of Pneumonia, by gangrene, is much more rare than has been imagined ; and, when it does occur, it is usually joined with the termination by effusion (cccxlvi.), and the symptoms of the one are hardly to be distinguished from those of the other.

CCCLXI. The cure of pneumonic inflammation must proceed upon the general plan (CCXLIV.); but the importance of the part affected, and the danger to which it is exposed, require that the remedies be fully, as well as early, employed.

CCCLXII. The remedy chiefly to be depended upon, is that of bleeding at the arm, which will be performed with most advantage in the arm of the side affected, but may be done in either arm, as may be most convenient for the patient or the surgeon. The quantity drawn must be suited to the violence of the disease, and to the vigor of the patient, and generally ought to be as large as this last circumstance will allow. The remission of pain, and the relief of respiration, during the flowing of the blood, may limit the quantity to be then drawn ; but if these symptoms of relief do not appear, the bleeding should be continued till the symptoms of a beginning syncope come on. It is seldom that one bleeding, however large, will prove a cure of this disease ; and although the pain and difficulty of breathing may be much relieved by the first bleeding, these symptoms commonly, and after no long interval, recur, often with as much violence as before. In the event of such recurrence, the bleeding is to be repeated, even in the course of the same day, and perhaps to the same quantity as before.

Sometimes the second bleeding may be larger than the first. There are persons who, by their constitution are ready to faint even upon a small bleeding ; and, in such persons, this may prevent the drawing so much blood at first as a pneumonic inflammation might require ; but, as the same persons are frequently found to bear after bleedings better than the first, this allows the second and subsequent bleedings to be larger, and to such a quantity as the symptoms of the disease may seem to demand.

CCCLXIII. It is according to the state of the symptoms that bleedings are to be repeated, and they will be more effectual when practised in the course of the first three days, than afterwards ; but they are not to be omitted.

although four days of the disease may have already elapsed. If the physician shall not have been called in sooner, or if the bleedings practised during the first days shall not have been large enough, or even although these bleedings shall have procured some remission ; yet, upon the recurrence of the urgent symptoms, the bleeding should be repeated at any period of the disease, especially within the first fortnight, and even afterwards, if a tendency to suppuration be not evident, or if, after a seeming solution, the disease shall have again returned.

CCCLXIV. With respect to the quantity of blood which ought, or which with safety may be taken away, no general rules can be delivered, as it must be very different, according to the state of the disease, and the constitution of the patient. In an adult male, of tolerable strength, a pound of blood, avoirdupois, is a full bleeding. Any quantity above twenty ounces is a large, and any quantity below twelve, a small bleeding. A quantity of from four to five pounds, in the course of two or three days, is generally as much as such patients will safely bear ; but, if the intervals between the bleedings, and the whole of the time during which the bleedings have been employed, have been long, the quantity taken, upon the whole, may be greater.

CCCLXV. When a large quantity of blood has been already taken from the arm, and when it is doubtful if more can with safety be drawn in that manner, some blood may still be taken by cupping and scarifying. Such a measure will be more particularly proper, when the continuance or recurrence of pain, rather than the difficulty of breathing, becomes the urgent symptom, and then the cupping and scarifying should be made as near to the pained part as can conveniently be done.

CCCLXVI. An expectoration takes place sometimes very early in this disease ; but if, notwithstanding that, the urgent symptoms should still continue, the expectoration must not supersede the bleedings mentioned, and, during the first days of the disease, its solution is not to be trusted to the expectoration alone. It is in a more ad-

vanced stage only, when the proper remedies have been before employed, and when the symptoms have suffered a considerable remission, that the entire cure may be trusted to a copious and free expectoration.

CCCLXVII. During the first days of the disease, I have not found that bleeding stops expectoration. On the contrary, I have often observed bleeding promote it ; and it is in a more advanced stage of the disease only, when the patient, by large evacuations, and the continuance of the disease, has been already exhausted, that bleeding seems to stop expectoration. It appears to me, that even then bleeding does not stop expectoration, so much by weakening the powers of expectoration, as by favoring the serous effusion into the bronchiæ (CCCXLVIII.), and thereby preventing it.

CCCLXVIII. While the bleedings we have mentioned shall be employed, it will be necessary to employ also every part of the antiphlogistic regimen (cxxxi—cxxxii.), and particularly to prevent the irritation which might arise from any increase of heat. For this purpose, it will be proper to keep the patient out of bed, while he can bear it easily, and, when he cannot, to cover him very lightly while he lies in bed. The temperature of his chamber ought not to exceed sixty degrees of Farenheit's thermometer, and whether it may be at any time colder, I am uncertain.

CCCLXIX. Mild and diluent drinks, moderately tepid, at least never cold, given by small portions at a time, ought to be administered plentifully. These drinks may be impregnated with vegetable acids. They may be properly accompanied also with nitre, or some other neutrals ; but these salts should be given separately from the drink.

It has been alleged, that both acids and nitre are ready to excite coughing, and in some persons they certainly have this effect ; but, except in persons of a peculiar habit, I have not found their effects in exciting cough so considerable or troublesome as to prevent our seeking the advantages otherwise to be obtained from these medicines.

CCCLXX. Some practitioners have doubted, if purgatives can be safely employed in this disease ; and indeed a spontaneous diarrhoea occurring in the beginning of the disease has seldom proved useful ; but I have found the moderate use of cooling laxatives generally safe ; and have always found it useful to keep the belly open by frequent emollient glysters.

CCCLXXI. To excite full vomiting by emetics, I judge to be a dangerous practice in this disease : but I have found it useful to exhibit nauseating doses ; and, in a somewhat advanced state of the disease, I have found such doses prove the best means of promoting expectoration.*

CCCLXXII. Fomentations and poultices applied to the pained part have been recommended, and may be useful ; but the application of them is often inconvenient, and may be entirely omitted for the sake of the more effectual remedy, blistering.

Very early in the disease, a blister should be applied as near to the pained part as possible. But, as when the irritation of a blister is present, it renders bleeding less effectual, so the application of the blister should be delayed till a bleeding shall have been employed. If the disease be moderate, the blister may be applied immediately after the first bleeding ; but if the disease be violent, and it is presumed that a second bleeding may be necessary soon after the first, it will then be proper to delay the blister till after the second bleeding, when it may be supposed that any farther bleeding may be postponed till the irritation arising from the blister shall have ceased. It may be frequently necessary in this disease to repeat the blistering ; and, in that case, the plaisters should always be applied somewhere on the thorax ; for, when applied to more distant parts, they have little effect. The keeping the blistered parts open, and making what

* As nausea is found to reduce the strength and frequency of the pulse, it might perhaps prove useful in pneumonia ; but medicines employed with this intention, are so apt to excite vomiting, and, in consequence, rupture or effusion, that it perhaps would be more adviseable to refrain altogether from their administration.

is called a perpetual blister, has much less effect than a fresh blistering.

CCCLXXIII. As this disease often terminates by an expectoration, so various means of promoting this have been proposed ; but none of them appear to be very effectual ; and some of them being acrid stimulant substances, cannot be very safe.

The gums usually employed seem too heating : squills seem to be less so ; but they are not very powerful, and sometimes inconvenient by the constant nausea they induce.

The volatile alkali may be of service as an expectorant ; but it should be reserved for an advanced state of the disease.

Mucilaginous, and oily demulcents, appear to be useful, by allaying that acrimony of the mucus which occasions too frequent coughing* ; and which coughing prevents the stagnation and thickening of the mucus, and thereby its becoming mild.

The receiving into the lungs the steams of warm water impregnated with vinegar, has often proved useful in promoting expectoration†.

But, of all other remedies, the most powerful for this purpose are antimonial medicines, given in nauseating doses, as in CLXXIX. Of these, however, I have not found the kermes mineral more efficacious than emetic tartar, or antimonial wine ; and the dose of the kermes is much more uncertain than that of the others.

CCCLXXIV. Though a spontaneous sweating often proves the crisis of this disease, it ought not to be excited by art, unless with much caution. At least, I have not yet found it either so effectual or safe, as so me writ-

* R. OI. Amyd.

Mel. Optim. $\frac{1}{2}$ 3 ℥.

Mucilag. gum. Arab. 3 ii. probe subactis adde.

Aq. Hordeat. $\frac{1}{2}$ ii.

Cinnam. simp. $\frac{1}{2}$ ℥.

Succ. limon. $\frac{1}{2}$ ℥. M.

Cap. coch. 1. urgente tussi.

†. This is perhaps the safest and most powerful expectorant we can employ. The impregnation of vinegar sometimes renders it too stimulating. In these cases, the steams of warm water alone should be inhaled.

ers have alleged. When, after some remission of the symptoms, spontaneous sweats of a proper kind arise, they may be encouraged; but it ought to be without much heat, and without stimulant medicines. If, however, the sweats be partial and clammy only, and a great difficulty of breathing still remain, it will be very dangerous to encourage them.

CCCLXXV. Physicians have differed much in opinion with regard to the use of opiates in pneumonic inflammation. To me it appears, that in the beginning of the disease, and before bleeding and blistering have produced some remission of the pain, and of the difficulty of breathing, opiates have a very bad effect, by their increasing the difficulty of breathing, and other inflammatory symptoms. But, in a more advanced state of the disease, when the difficulty of breathing has abated, and when the urgent symptom is a cough, proving the chief cause of the continuance of the pain and of the want of sleep, opiates may be employed with great advantage and safety. The interruption of the expectoration, which they seem to occasion, is for a short time only; and they seem often to promote it, as they occasion a stagnation of what was by frequent coughing dissipated insensibly, and therefore give the appearance of what physicians have called Concocted Matter.

C H A P. VII.

OF THE PERIPNEUMONIA NOTHA, OR BASTARD PERI-PNEUMONY.

CCCLXXVI. A DISEASE under this name is mentioned in some medical writings of the sixteenth century; but it is very doubtful if the name was then applied to the same disease to which we now apply it. It appears to me, that unless some of the cases described under the title of *Catarrhus Suffocativus* be supposed to have been of the kind I am now to treat of, there was

no description of this disease given before that by Sydenham, under the title I have employed here.

CCCLXXVII. After Sydenham, Boerhaave was the first, who in a system took notice of it as a distinct disease; and he has described it in his aphorisms, although with some circumstances different from those in the description of Sydenham. Of late, Mr. Lieutaud has with great confidence asserted, that Sydenham and Boerhaave had, under the same title, described different diseases; and that, perhaps, neither of them had on this subject delivered any thing but hypothesis.

CCCLXXVIII. Notwithstanding this bold assertion, I am humbly of opinion, and the Baron Van Swieten seems to have been of the same, that Sydenham and Boerhaave did describe under the same title, one and the same disease. Nay, I am further of opinion, that the disease described by Mr. Lieutaud himself, is not essentially different from that described by both the other authors. Nor will the doubts of the very learned, but modest Morgagni, on this subject, disturb us, if we consider, that while very few describers of diseases either have it in their power, or have been sufficiently attentive in distinguishing between the essential and accidental symptoms of disease; so, in a disease which may have not only different, but a greater number of symptoms in one person than it has in another, we need not wonder that the descriptions of the same disease by different persons should come out in some respects different. I shall, however, enter no further into this controversy; but endeavor to describe the disease as it has appeared to myself; and, as I judge, in the essential symptoms, much the same as it has appeared to all the other authors mentioned.

CCCLXXIX. This disease appears at the same seasons that other pneumonic and catarrhal affections commonly do; that is, in autumn and in spring. Like these diseases also, it is seemingly occasioned by sudden changes of the weather from heat to cold. It appears also during the prevalence of contagious catarrhs; and it is

frequently under the form of the Peripneumonia Notha, that these catarrhs prove fatal to elderly persons.

This disease attacks most commonly persons somewhat advanced in life, especially those of a full phlegmatic habit; those who have before been frequently liable to catarrhal affections, and those who have been much addicted to the large use of fermented and spiritous liquors.

The disease commonly comes on with the same symptoms as other febrile diseases; that is, with alternate chills and heats: and the symptoms of pyrexia are sometimes sufficiently evident; but in most cases these are very moderate, and in some hardly at all appear. With the first attack of the disease, a cough comes on, usually accompanied with some expectoration; and in many cases there is a frequent throwing up of a considerable quantity of a viscid opaque mucus. The cough often becomes frequent and violent; is sometimes accompanied with a rending headache; and, as in other cases of cough, a vomiting is sometimes excited by it. The face is sometimes flushed, and some giddiness or drowsiness often attends the disease. A difficulty of breathing, with a sense of oppression, or straitening in the chest, with some obscure pains there, and a sense of lassitude over the whole body, very constantly attend this disease. The blood drawn in this disease, shows a buffy surface, as in other inflammatory affections.

The disease has often the appearance only of a more violent catarrh, and after the employment of some remedies, is entirely relieved by a free and copious expectoration. In other cases, however, the feverish and catarrhal symptoms are at first very moderate, and even slight; but, after a few days, these symptoms suddenly become considerable, and put an end to the patient's life, when the indications of danger were before very little evident.

CCCLXXX. From the different circumstances in which this disease appears, the pathology of it is difficult. It is certainly often no other at first than a catarrhal affection, which in elderly persons, is frequently attended with a large afflux of mucus to the lungs and it was on

this footing that Sydenham considered it as only differing in degree from his *Febris Hyemalis*. A catarrh, however, is strictly an affection of the mucous membrane and follicles of the bronchiæ alone : but it may readily have, and frequently has a degree of pneumonic inflammation joined to it ; and in that case may prove more properly the peculiar disease we treat of here. But, further, as pneumonic inflammation very often produces an effusion of serum into the bronchiæ (cccxlviii.), so this, in elderly persons, may occur in consequence of a slight degree of inflammation ; and when it does happen, will give the exquisite and fatal cases of the peri-pneumonia notha.

ccclxxxii. After this attempt to establish the pathology, the method of cure in the different circumstances of the disease will not be difficult.

In case the fever, catarrhal and pneumonic symptoms, are immediately considerable, a blood letting will certainly be proper and necessary : but, where these symptoms are moderate, a blood letting will hardly be requisite ; and when an effusion is to be feared, the repetition of blood letting may prove extremely hurtful.

In all cases, the remedies chiefly to be depended upon, are vomiting and blistering. Full vomiting may be frequently repeated, and nauseating doses ought to be constantly employed.

Purging may perhaps be useful ; but as it is seldom so in pneumonic affections, nothing but gentle laxatives are here necessary.

In all the circumstances of this disease, the antiphlogistic regimen is proper : Cold is to be guarded against ; but much external heat is to be as carefully avoided.

ccclxxxii. If a person sweats easily, and it can be brought out by the use of mild tepid liquors only, the practice may in such persons be tried. See MORGAGNI *De Sed. et Caus.* Epist. xiii. Art. 4.

ccclxxxiii. I might here, perhaps, give a separate section on the Carditis and Pericarditis, or the Inflammations of the Heart and Pericardium ; but they hardly require a particular consideration. An acute inflamma-

tion of the pericardium is almost always a part of the same pneumonic affection I have been treating of ; and is not always distinguished by any different symptoms ; or if it be, does not require any different treatment. The same may be said of an acute inflammation of the heart itself ; and when it happens that the one or other is discovered by the symptoms of palpitation or syncope, no more will be implied than that the remedies of pneumonic inflammation should be employed with greater diligence.

From dissections, which show the heart and pericardium affected with erosions, ulcerations, and abscesses, we discover that these parts had been before affected with inflammation ; and that in cases where no symptoms of pneumonic inflammation had appeared : it may therefore be alleged, that those inflammations of the heart and pericardium should be considered as diseases independent of the pneumonic. This indeed is just : but the history of such cases proves, that those inflammations had been of a chronic kind, and hardly discovering themselves by any peculiar symptoms ; or, if attended with symptoms marking an affection of the heart, these were however such as have been known frequently to arise from other causes than inflammation. There is therefore, upon the whole, no room for our treating more particularly of the inflammation of the heart or pericardium.

C H A P. VIII.

OF THE GASTRITIS*, OR INFLAMMATION OF THE STOMACH.

ccccxxxiv. AMONG the inflammations of the abdominal region, I have given a place in our Nosology to the Peritonitis ; comprehending under that title, not

* Pyrexia inclining to typhus ; anxiety ; heat and pain in the epigastric region, increased by whatever is swallowed ; an inclination to vomit ; the ingesta immediately rejected ; hiccup. *Syn. Nof.*

only the inflammations affecting the peritonæum lining the cavity of the abdomen, but also those affecting the extensions of this membrane in the omentum and mesentery. It is not however proposed to treat of them here, because it is very difficult to say by what symptoms they are always to be known ; and farther, because when known, they do not require any remedies besides those of inflammation in general. I proceed, therefore, to treat of those inflammations, which, affecting viscera of peculiar functions, both give occasion to peculiar symptoms, and require some peculiarities in the method of cure ; and I shall begin with the inflammation of the stomach.

ccclxxxv. The inflammation of the stomach is of two kinds, Phlegmonic, or Erythematic*. The first may be seated in what is called the Nervous Coat of the stomach, or in the peritonæum investing it. The second is always seated in the villous coat and cellular texture immediately subjacent.

ccclxxxvi. The phlegmonic inflammation of the stomach, or what has been commonly treated of under the title of Gastritis, is known by an acute pain in some part of the region of the stomach, attended with pyrexia, with frequent vomiting, especially upon occasion of any thing being taken down into the stomach, and frequently with hickup. The pulse is commonly small and hard ; and there is a greater loss of strength in all the functions of the body, than in the case of almost any other inflammation.

ccclxxxvii. This inflammation may be produced by various causes ; as, by external contusion ; by acrids of various kinds taken into the stomach ; frequently by very cold drink taken into it while the body is very warm ; and sometimes by over distension, from the having taken in a large quantity of food of difficult digestion. All these may be considered as external causes ; but the disease sometimes arises also from internal causes not so well understood. It may arise from in-

* This is a new term ; but whoever considers what is said in ccclxxiv. will, I expect, perceive the propriety, and even the necessity of it. *Ambit.*

flammations of the neighboring parts communicated to the stomach, and is then to be considered as a symptomatic affection only. It may arise also from various acrimonies generated within the body, either in the stomach itself, or in other parts, and poured into the cavity of the stomach. These are causes more directly applied to the stomach ; but there are perhaps others originating elsewhere, and affecting the stomach only sympathetically. Such may be supposed to have acted in the case of putrid fevers and exanthematic pyrexiae ; in which, upon dissection, it has been discovered that the stomach had been affected with inflammation.

CCCLXXXVIII. From the sensibility of the stomach, and its communication with the rest of the system, it will be obvious, that the inflammation of this organ, by whatever causes produced, may be attended with fatal consequences. In particular, by the great debility which such an inflammation suddenly produces, it may quickly prove fatal, without running the common course of inflammations.

When it lasts long enough to follow the ordinary course of other inflammations, it may terminate by resolution, gangrene, or suppuration. The scirrhosities which are often discovered affecting the stomach, are seldom known to be the consequences of inflammation.

CCCLXXXIX. The tendency of this disease to admit of resolution, may be known by its having arisen from no violent cause ; by the moderate state of the symptoms ; and by a gradual remission of these, especially in consequence of remedies employed in the course of the first, or at farthest, the second week of the disease.

CCXC. The tendency to suppuration may be known by the symptoms continuing, in a moderate degree, for more than one or two weeks ; and likewise by a considerable remission of the pain, while a sense of weight and an anxiety still remain.

When an abscess has been formed, the frequency of the pulse is at first abated ; but soon after it is again increased, with frequent cold shiverings, and with marked exacerbations in the afternoon and evening, followed

by night sweatings, and other symptoms of hectic fever. These at length prove fatal, unless the abscesses open into the cavity of the stomach, the pus be evacuated by vomiting, and the ulcer soon heal.

cccxc*i.* The tendency to gangrene may be suspected from the violence of the symptoms not yielding to the remedies employed during the first days of the disease ; and that a gangrene has already begun, may be known from the sudden remission of the pain, while the frequency of the pulse continues, and at the same time becomes weaker, accompanied with other marks of an increasing debility in the whole system.

cccxc*ii.* From the dissection of dead bodies it appears, that the stomach very often has been affected with inflammation, when the characteristic symptoms of it (ccclxxxvi.) had not appeared ; and therefore it is very difficult to lay down any general rules for the cure of this disease.

cccxc*iii.* It is only in the case of phlegmonic inflammation, as characterised in ccclxxxvi. that we can advise the cure or resolution to be attempted by large and repeated bleedings employed early in the disease : and we are not to be deterred from these by the smallness of the pulse ; for, after bleeding, it commonly becomes fuller and softer. After bleeding, a blister ought to be applied to the region of the stomach ; and the cure will be assisted by fomentations of the whole abdomen, as well as by frequent emollient and laxative glysters.

cccxc*iv.* In this disease, the irritability of the stomach will not admit of any medicines being thrown into it ; and if any internal medicines can be supposed necessary, they must be exhibited in glysters. The giving of drink may be tried ; but it ought to be of the very mildest kind, and in very small quantities at a time.

cccxc*v.* Opiates, in whatever manner exhibited, are very hurtful during the first days of the disease ; but when its violence shall have abated, and when the violence of the pain and vomiting recur at intervals only, opiates given in glysters may be cautiously tried, and sometimes have been employed with advantage.

cccxcvi. A tendency to suppuration, in this disease, is to be obviated by the means just now proposed. After a certain duration of the disease, it cannot be prevented by any means whatever ; and when actually begun, must be left to nature ; the business of the physician being only to avoid all irritation.

cccxcvii. A tendency to gangrene can be obviated in no other way than by the means suggested cccxciii. employed early in the disease ; and when it does actually supervene, admits of no remedy.

cccxcviii. Erythematic inflammations of the stomach, are more frequent than those of the phlegmonic kind. It appears, at least from dissections, that the stomach has often been affected with inflammation, when neither pain nor pyrexia had before given any notice of it ; and such inflammation I apprehend to have been chiefly of the erythematic kind. This species of inflammation also, is especially to be expected from acrimony of any kind thrown into the stomach ; and would certainly occur more frequently from such a cause were not the interior surface of this organ commonly defended by mucus exuding in large quantity from the numerous follicles placed immediately under the villosus coat. Upon many occasions however, the exudation of mucus is prevented, or the liquid poured out is of a less viscid kind, so as to be less fitted to defend the subjacent nerves ; and it is in such cases that matters, even of moderate acrimony, may produce an erythematic affection of the stomach.

cccxcix. From what has been said, it must appear, that an erythematic inflammation of the stomach may frequently occur ; but will not always discover itself, as it sometimes takes place without pyrexia, pain, or vomiting.

cccc. There are cases, however, in which it may be discovered. The affection of the stomach sometimes spreads into the œsophagus, and appears in the pharynx, as well as on the whole internal surface of the mouth. When, therefore, an erythematic inflammation affects the mouth and fauces, and when at the same time there

shall be in the stomach an unusual sensibility to all acrids, with a frequent vomiting, there can be little doubt of the stomach being affected with the same inflammation that has appeared in the fauces. Even when no inflammation appears in the fauces, yet if some degree of pain be felt in the stomach, if there be a want of appetite, an anxiety, frequent vomiting, an unusual sensibility with respect to acrids, some thirst, and frequency of pulse, there will then be room to suspect an erythematic inflammation of the stomach; and we have known such symptoms, after some time, discover their cause more clearly by the appearance of the inflammation in the fauces or mouth.

Erythematic inflammation is often disposed to spread from one place to another on the same surface; and, in doing so, to leave the place it had at first occupied. Thus, such an inflammation has been known to spread successively along the whole course of the alimentary canal, occasioning in the intestines diarrhoea, and in the stomach vomitings; the diarrhoea ceasing when the vomitings came on, or the vomitings upon the coming on of the diarrhoea.

cccc. When an erythematic inflammation of the stomach shall be discovered, it is to be treated differently, according to the difference of its causes and symptoms.

When it is owing to acrid matters taken in by the mouth, and when these may be supposed still present in the stomach, they are to be washed out by throwing in a large quantity of warm and mild liquids, and by exciting vomiting*. At the same time, if the nature of the acrimony and its proper corrector be known, this should

* White vitriol, on account of the vomiting which it almost instantaneously excites, is generally employed on these occasions. As to the correctors of particular acrimonious substances, we know little. Where metallic salts have been taken, that is, the calces of metals united with acids, alkaline solu*tions* are most effectual. When the oxyd of arsenic has been taken, the alkaline sulphurets have been recommended as depriving it of its oxygen in which state it is supposed to be inert. Their efficacy, however, is much doubted. In all cases of this nature, we should endeavor, as soon as possible, to defend the stomach and intestines from the irritation of these acid substances, by sheathing them with oily and mucilaginous fluids.

be thrown in ; or if a specific corrector be not known, some general demulcents should be employed.

ccccii. These measures, however, are more suited to prevent the inflammation, than to cure it after it has taken place. When this last may be supposed to be the case, if it be attended with a sense of heat, with pain and pyrexia, according to the degree of these symptoms the measures proposed in cccxciii. are to be more or less employed.

cccciii. When an erythematic inflammation of the stomach has arisen from internal causes, if pain and pyrexia accompany the disease, some bleeding, in persons not otherwise weakened, may be employed : but, as the affection often arises in putrid diseases, and in convalescents from fever, so in these cases bleeding is inadmissible ; all that can be done being to avoid irritation, and to throw into the stomach what quantity of acids, and of acescent aliments, it shall be found to bear.

In some conditions of the body, in which this disease arises, the Peruvian bark and bitters may seem to be indicated ; but an erythematic state of the stomach does not commonly allow of them.

C H A P. IX.

OF THE ENTERITIS*, OR INFLAMMATION OF THE INTESTINES.

cccciv. THE inflammation of the intestines, like that of the stomach, may be either phlegmonic, or erythematic : but, on the subject of the latter, I have nothing to add to what has been said in the last chapter ; and shall here therefore treat of the phlegmonic inflammation only.

ccccvi. This inflammation may be known to be present, by a fixed pain of the abdomen, attended with

* Pyrexia inclining to typhus, a smarting pain of the abdomen, accompanied with a sense of tightness and twisting about the umbilicus ; vomiting ; abdurate costiveness. *Syn.* *Nos.*

pyrexia, costiveness, and vomiting. Practical writers mention the pain in this case as felt in different parts of the abdomen, according to the different seat of the inflammation; and so indeed it sometimes happens; but very often the pain spreads over the whole belly, and is felt more especially about the navel.

ccccvii. The Enteritis and Gastritis arise from like causes; but the former, more readily than the latter, proceeds from cold applied to the lower extremities, or to the belly itself. The enteritis has likewise its own peculiar causes, as supervening upon the spasmodic colic, incarcerated hernia, and volvulus.

ccccviii. Inflammations of the intestines have the same terminations as those of the stomach; and, in both cases, the several tendencies are to be discovered by the same symptoms (ccclxxxix.—cccxi.)

ccccix. The cure of the enteritis is in general the same with that of the gastritis (cccxciii. et seq.); but in the enteritis, there is commonly more access to the introduction of liquids, of acid, acescent, and other cooling remedies, and even of laxatives. As, however, a vomiting so frequently attends this disease, care must be taken not to excite that vomiting by either the quantity or the quality of any thing thrown into the stomach.

The same observation, with respect to the use of opiates, is to be made here as in the case of gastritis.

ccccx. Under the title of Enteritis, it has been usual with practical writers to treat of the remedies proper for the colic, and its higher degree named *Ileus*; but, although it be true that the enteritis and colic do frequently accompany each other, I still hold them to be distinct diseases, to be often occurring separately, and accordingly to require and admit of different remedies. I shall therefore delay speaking of the remedies proper for the colic, till I shall come to treat of this disease in its proper place.

ccccxi. What might be mentioned with respect to the suppuration or gangrene occurring in the enteritis, may be sufficiently understood from what has been said on the same subject with respect to the gastritis.

C H A P. X.

OF THE HEPATITIS*, OR INFLAMMATION OF THE LIVER.

ccccxii. THE inflammation of the liver seems to be of two kinds ; the one acute, the other chronic.

ccccxiii. The acute is attended with pungent pain, considerable pyrexia, a frequent, strong, and hard pulse, and high colored urine.

ccccxiv. The chronic hepatitis very often does not exhibit any of these symptoms ; and it is only discovered to have happened, by our finding in the liver, upon dissection, large abscesses, which are presumed to be the effect of some degree of previous inflammation. As this chronic inflammation is seldom to be certainly known, and, therefore, does not lead to any determined practice, we omit treating of it here, and shall only treat of what relates to the acute species of the hepatitis.

ccccxv. The acute hepatitis may be known by a pain, more or less acute, in the right hypochondrium, increased by pressing upon the part. The pain is very often in such a part of the side, as to make it appear like that of a pleurisy, and frequently, like that too, is increased on respiration. The disease is, in some instances, also attended with a cough, which is commonly dry, but sometimes humid ; and, when the pain thus resembles that of a pleurisy, the patient cannot lie easily except upon the side affected.

* Pyrexia, tension and pain in the right hypochondrium, sometimes pungent as in pleurisy, oftener obtuse ; pain at the clavicular, and top of the right shoulder ; a difficulty of lying on the left side ; dyspnoea ; dry cough ; vomiting ; hickup. *Syn. Nos.*

Species 2. Chronic inflammation often shows no characteristic marks ; often however we may suspect its presence from some of the causes of hepatitis being applied ; from a sense of fulness and weight in the right hypochondrium ; from pain being now and then felt in the same part ; from a sense of pain upon pressure of the right hypochondrium, or upon lying on the left side ; and finally, from slight pyrexia at times accompanying the above symptoms. *Syn. Nos.*

In every kind of acute hepatitis, the pain is often extended to the clavicle, and to the top of the shoulder. The disease is attended sometimes with hickup, and sometimes with vomiting. Many practical writers have mentioned the jaundice, or a yellow color of the skin and eyes, as a very constant symptom of the hepatitis ; but experience has shown, that it may often occur without any such symptom.

ccccxvi. The remote causes of hepatitis are not always to be discerned, and many have been assigned on a very uncertain foundation. The following seem to be frequently evident : 1. External violence from contusions or falls, and especially those which have occasioned a fracture of the cranium. 2. Certain passions of the mind. 3. Violent summer heats. 4. Violent exercise. 5. Intermittent and remittent fevers. 6. Cold, applied externally or internally ; and, therefore, in many cases, the same causes which produce pneumonic inflammation, produce hepatitis, and whence also the two diseases are sometimes joined together. 7. Various solid concretions or collections of liquid matter, in the substance of the liver, produced by unknown causes. Lastly, The acute is often induced by a chronic inflammation of this viscus.

ccccxvii. It has been supposed, that the hepatitis may be an affection either of the extremities of the hepatic artery, or of those of the vena portarum ; but of the last supposition there is neither evidence nor probability.

ccccxviii. It seems probable, that the acute hepatitis is always an affection of the external membrane of the liver, and that the parenchymatic is of the chronic kind. The acute disease may be seated either on the convex or on the concave surface of the liver. In the former case, a more pungent pain and hickup may be produced, and the respiration is more considerably affected. In the latter, there occurs less pain, and a vomiting is produced, commonly by some inflammation communicated to the stomach. The inflammation of the concave surface of the liver, may be readily communicated to the gall, bladder and biliary ducts ; and this, perhaps, is the only case of idiopathic hepatitis attended with jaundice.

ccccxix. The hepatitis, like other inflammations, may end by resolution, suppuration, or gangrene ; and the tendency to the one or the other of these events, may be known from what has been delivered above.

ccccxx. The resolution of hepatitis is often the consequence of, or is attended with evacuations of different kinds. A hæmorrhagy, sometimes from the right nostril, and sometimes, from the hæmorrhoidal vessels, gives a solution of the disease. Sometimes a bilious diarrhoea contributes to the same event ; and the resolution of the hepatitis, as of other inflammations, is attended with sweating, and with an evacuation of urine, depositing a copious sediment. Can this disease be resolved by expectoration ? It would seem to be sometimes cured by an erysipelas appearing in some external part.

ccccxxi. When this disease has ended in suppuration, the pus collected may be discharged by the biliary ducts ; or, if the suppurated part does not anywhere adhere closely to the neighboring parts, the pus may be discharged into the cavity of the abdomen ; but if during the first state of inflammation, the affected part of the liver shall have formed a close adhesion to some of the neighboring parts, the discharge of the pus, after suppuration, may be various, according to the different seat of the abscesses. When seated on the convex part of the liver, if the adhesion be to the peritonæum lining the common teguments, the pus may make its way through these, and be discharged outwardly ; or if the adhesion should have been to the diaphragm, the pus may penetrate through this, and into the cavity of the thorax, or of the lungs, and through the latter may be discharged by coughing. When the abscess of the liver is seated on its concave part, then, in consequence of adhesions, the pus may be discharged into the stomach or the intestines, and into these last either directly, or by the intervention of the biliary ducts.

ccccxxii. The prognostics in this disease are established upon the general principles relating to inflammation, upon the particular circumstances of the liver, and upon the particular state of its inflammation.

The cure of this disease must proceed upon the general plan ; by bleeding, more or less, according to the urgency of pain and pyrexia ; by the application of blisters ; by fomentations, of the external parts in the usual manner, and of the internal parts by frequent emollient glysters ; by frequently opening the belly, by means of gentle laxatives, and by diluent and refrigerant remedies.

ccccxxiii. Although, in many cases, the chronic hepatitis does not clearly discover itself, yet, upon many occasions, it may perhaps be discovered, or at least suspected, from those causes which might affect the liver (ccc-xvi.) having been applied ; from some fulness and some sense of weight in the right hypochondrium ; from some shooting pains at times felt in that region ; from some uneasiness or pain felt upon pressure in that part ; from some uneasiness from lying upon the left side ; and, lastly, from some degree of pyrexia, combined with more or fewer of these symptoms.

When, from some of these circumstances, a chronic inflammation is to be suspected, it is to be treated by the same remedies as in the last paragraph, employed more or less, as the degree of the several symptoms shall more distinctly indicate.

ccccxxiv. When, from either kind of inflammation, a suppuration of the liver has been formed, and the abscess points outwardly, the part must be opened, the pus evacuated, and the ulcer healed, according to the ordinary rules for cleansing and healing such abscesses and ulcers.

ccccxxv. I might here consider the Splenitis or inflammation of the spleen ; but it does not seem necessary, because the disease very seldom occurs. When it does, it may be readily known by the character given in our Nosology ; and its various termination, as well as the practice which it requires, may be understood from what has been already said with respect to the inflammations of the other abdominal viscera.

C H A P. XI.

OF THE NEPHRITIS*, OR THE INFLAMMATION OF THE KIDNEYS.

ccccxxvi. This disease, like other internal inflammations, is always attended with pyrexia, and is especially known from the region of the kidney being affected by pain; commonly obtuse, sometimes pungent. This pain is not increased by the motion of the trunk of the body, so much as a pain of the rheumatic kind affecting the same region. The pain of the nephritis may be often distinguished, by its shooting along the course of the ureter, and is frequently attended with a drawing up of the testicle, and with a numbness of the limb, on the side affected; although, indeed, these symptoms most commonly accompany the inflammation arising from a calculus in the kidney or in the ureter. The nephritis is almost constantly attended with frequent vomiting, and often with costiveness and colic pains. Usually the state of the urine is changed; it is most commonly of a deep red color, is voided frequently, and in small quantity at a time. In more violent cases, the urine is sometimes colorless.

ccccxxvii. The remote causes of this disease may be various; as, external contusion; violent or long continued riding; strains of the muscles of the back incumbent on the kidneys; various acrids, in the course of the circulation, conveyed to the kidney; and, perhaps, some other internal causes not yet well known. The most frequent is that of calculous matter obstructing the tubuli uriniferi, or calculi formed in the pelvis of the kidneys, and either sticking there, or fallen into the ureter.

* Pyrexia; pain in the region of the kidneys; frequent desire to make urine, which is either of a pale or very red color; vomiting; numbness of the thigh; retraction and pain of the testicle of the same side.

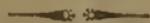
ccccxxviii. The various event of this disease may be understood from what has been delivered on the subject of other inflammations.

ccccxxix. Writers, in treating of the cure of nephritis, have commonly, at the same time, treated of the cure of the Calculus renalis ; but, though this may often produce nephritis, it is to be considered as a distinct and separate disease ; and what I have to offer as to the mode of treating it, must be reserved to its proper place. Here I shall treat only of the cure of the Nephritis Vera, or Idiopathica.

ccccxxx. The cure of this proceeds upon the general plan, by bleeding, external fomentation, frequent emollient glysters, antiphlogistic purgatives, and the free use of mild and demulcent liquids. The application of blisters is hardly admissible, or at least, will require great care, to avoid any considerable absorption of the cantharides.

ccccxxxii. The Cystitis, or inflammation of the bladder, is seldom a primary disease, and, therefore, is not to be treated of here. The treatment of it, so far as necessary to be explained, may be readily understood from what has been already delivered.

ccccxxxii. Of the visceral inflammations, there remains to be considered the inflammation of the Uterus ; but I omit it here, because the consideration of it cannot be separated from that of the diseases of child bearing women.



C H A P. XII.

OF THE RHEUMATISM*.

ccccxxxiii. Of this disease there are two species, the one named the Acute, the other the Chronic rheumatism.

* *Acute Rheumatism.* Pyrexia, pain about the joints, following the course of the muscles, generally affecting the larger joints, and increased by external heat.

ccccxxxiv. It is the Acute Rheumatism which especially belongs to this place, as, from its causes, symptoms, and methods of cure, it will appear to be a species of phlegmasia, or inflammation.

ccccxxxv. This disease is frequent in cold, and more uncommon in warm climates. It appears most frequently in autumn and spring, less frequently in winter, when the cold is considerable and constant, and very seldom during the heat of summer. It may occur, however, at any season, if vicissitudes of heat and cold be for the time frequent.

ccccxxxvi. The acute rheumatism generally arises from the application of cold to the body, when any way unusually warm ; or, when one part of the body is exposed to cold, whilst the other parts are kept warm ; or, lastly, when the application of the cold is long continued, as it is when wet or moist clothes are applied to any part of the body.

ccccxxxvii. These causes may affect persons of all ages ; but the rheumatism seldom appears in either very young or in elderly persons, and most commonly occurs from the age of puberty to that of thirty five years.

ccccxxxviii. These causes (ccccxxxvi.) may also affect persons of any constitution ; but they most commonly affect those of a sanguine temperament.

ccccxxxix. This disease is particularly distinguished by pains affecting the joints, for the most part the joints alone, but sometimes affecting also the muscular parts. Very often the pains shoot along the course of the muscles, from one joint to another, and are always much increased by the action of the muscles belonging to the joint or joints affected.

ccccxl. The larger joints are most frequently affected ; such as the hip joint, and knees of the lower, and the shoulders and elbows, of the upper extremities. The ankles and wrists are also frequently affected ; but

Chronic Rheumatism. After rheumatism, violent sprain, or luxation ; pains of the joints or muscles, increased by motion, more or less fleeting, alleviated by heat ; the joints are weak, stiff, and cold ; no pyrexia ; for the most part without any swelling. *Syn. Nef.*

the smaller joints, such as those of the toes or fingers, seldom suffer.

ccccxli. This disease, although sometimes confined to one part of the body only, yet very often affects many parts of it ; and then it comes on with a cold stage, which is immediately succeeded by the other symptoms of pyrexia, and particularly by a frequent, full, and hard pulse. Sometimes the pyrexia is formed before any pains are perceived ; but more commonly pains are felt in particular parts, before any symptoms of pyrexia appear.

ccccxlii. When no pyrexia is present, the pain is sometimes confined to one joint only ; but when any considerable pyrexia is present, although the pain may be chiefly in one joint, yet it seldom happens but that the pains affect several joints often at the very same time, but for the most part shifting their place, and having abated in one joint, become more violent in another. They do not commonly remain long in the same joint, but frequently shift from one to another, and sometimes return to joints formerly affected ; and in this manner the disease often continues for a long time.

ccccxlili. The pyrexia attending this disease has an exacerbation every evening, and is most considerable during the night, when the pains also become more violent ; and it is at the same time that the pains shift their place from one joint to another. The pains seem to be also increased during the night, by the body being covered more closely, and kept warmer.

ccccxliv. A joint, after having been for some time affected with pain, commonly becomes affected also with some redness and swelling, which is painful to the touch. It seldom happens that a swelling coming on does not alleviate the pain of the joint ; but the swelling does not always take off the pain entirely nor secure the joint against a return of it.

ccccxlv. This disease is commonly attended with some sweating, which occurs early in the course of the disease ; but it is seldom free or copious, and seldom either relieves the pains or proves critical.

ccccXLVI. In the course of this disease the urine is high colored, and in the beginning without sediment; but as the disease advances, and the pyrexia has more considerable remissions, the urine deposits a lateritious sediment. This however does not prove entirely critical; for the disease often continues long after such a sediment has appeared in the urine.

ccccXLVII. When blood is drawn in this disease, it always exhibits the appearance mentioned ccXXXVII.

ccccXLVIII. The acute rheumatism, though it has so much of the nature of the other phlegmasiae, differs from all those hitherto mentioned, in this, that it is not apt to terminate in suppuration. This almost never happens in rheumatism; but the disease sometimes produces effusions of a transparent gelatinous fluid into the sheaths of the tendons. If we may be allowed to suppose that such effusions are frequent, it must also happen that the effused fluid is commonly reabsorbed; for it has seldom happened, and never indeed to my observation, that considerable or permanent tumors have been produced, or such as required to be opened, and to have the contained fluid evacuated. Such tumors, however, have occurred to others, and the opening made in them has produced ulcers difficult to heal. Vide Storck. Ann. Med. II.

ccccXLIX. With the circumstances mentioned from ccccXXXIX. to ccccXLVIII. the disease often continues for several weeks. It seldom however proves fatal; and it rarely happens that the pyrexia continues to be considerable for more than two or three weeks. While the pyrexia abates in its violence, if the pains of the joints continue, they are less violent, more limited in their place, being confined commonly to one or a few joints only, and are less ready to change their place.

cccl. When the pyrexia attending rheumatism has entirely ceased; when the swelling, and particularly the redness of the joints, are entirely gone; but when pains still continue to affect certain joints, which remain stiff, which feel uneasy upon motion, or upon changes of weather, the disease is named the Chronic Rheumatism,

as it very often continues for a long time. As the chronic is commonly the sequel of the acute rheumatism, I think it proper to treat of the former also in this place.

ccccli. The limits between the acute and chronic rheumatism are not always exactly marked.

When the pains are still ready to shift their place; when they are especially severe in the night time; when at the same time they are attended with some degree of pyrexia, and with some swelling, and especially with some redness of the joints; the disease is to be considered as still partaking the nature of the acute rheumatism.

But when there is no degree of pyrexia remaining; when the pained joints are without redness; when they are cold and stiff; when they cannot easily be made to sweat; or when, while a free and warm sweat is brought out on the rest of the body, it is only clammy and cold on the pained joints; and when, especially, the pains of these joints are increased by cold, and relieved by heat applied to them, the case is to be considered as that of a purely chronic rheumatism*.

cccclii. The chronic rheumatism may affect different joints; but is especially ready to affect those joints which are surrounded with many muscles, and those of which the muscles are employed in the most constant and vigorous exertions. Such is the case of the vertebrae of the loins, the affection of which is named Lumbago; or

* It is of considerable importance to distinguish accurately between the acute and chronic rheumatism; and as our author has rather been brief on this subject, it will be proper to give the diagnosis more at length.

The acute rheumatism is attended with feverish symptoms; the natural functions are much affected; transition and exacerbation of pains are frequent; it occurs most frequently in January, February and March, and attacks chiefly persons from the age of ten to thirty, of strong inflammatory habits; the pains are more general in the system, affect more commonly the upper limbs, and are for the most part worse in bed; the parts affected, owing to their increased sensibility, are extremely painful on pressure.

The chronic rheumatism is not accompanied with febrile symptoms, and the natural functions are seldom affected; the pains are generally fixed, and rarely subject to exacerbation. It more frequently attacks males, and from the age of twenty five to fifty; it occurs most commonly in June, October, November, and December; it is often not easily relieved by art, but is seldom dangerous; the pains are not so general in the system, and attack the lower limbs more commonly than the upper; they are likewise generally easier in bed, and are not much pained on pressure.

that of the hip joint, when the disease is named Ischias, or Sciatica.

cccclili. Violent strains and spasms occurring on sudden, and somewhat violent exertions, bring on rheumatic affections, which at first partake of the acute, but very soon change into the nature of the chronic rheumatism.

ccccliv. I have thus delivered the history of rheumatism ; and suppose that, from what has been said, the remote causes, the diagnosis, and prognosis of the disease, may be understood. The distinction of the rheumatic pains from those resembling them, which occur in the syphilis and scurvy, will be obvious, either from the seat of those pains, or from the concomitant symptoms peculiar to these diseases. The distinction of rheumatism from gout will be more fully understood from what is to be delivered in the following chapter.

cccclv. With respect to the proximate cause of rheumatism, there have been various opinions. It has been imputed to a peculiar acrimony ; of which, however, in ordinary cases, I can find no evidence ; and from the consideration of the remote causes, the symptoms, and cure of the disease, I think the supposition very improbable.

The cause of an Ischias Nervosa, assigned by COTUNNIUS, appears to me hypothetical, and is not supported by either the phenomena or method of cure. That, however, a disease of a rheumatic nature may be occasioned by an acrid matter applied to the nerves, is evident from the toothach, a rheumatic affection generally arising from a carious tooth.

That pains resembling those of rheumatism, may arise from deep seated suppurations, we know from some cases depending on such a cause, and which, in their symptoms, resemble the lumbago or ischias. I believe, however, that by a proper attention, these cases depending on suppuration, may be commonly distinguished from the genuine cases of lumbago and ischias ; and, from what is said in cccccxlviii. I judge it to be at least

improbable, that a genuine lumbago or ischias does ever end in suppuration.

cccclvi. The proximate cause of rheumatism has been by many supposed to be a lensor of the fluids obstructing the vessels of the part; but the same consideration as in ccxli. 1, 2, 3, 4, and 5, will apply equally here for rejecting the supposition of a lensor.

cccclvii. While I cannot, therefore, find either evidence or reason for supposing that the rheumatism depends upon any change in the state of the fluids, I must conclude that the proximate cause of acute rheumatism is commonly the same with that of other inflammations not depending upon a direct stimulus.

cccclviii. In the case of rheumatism, I suppose that the most common remote cause of it, that is, cold applied, operates especially on the vessels of the joints; from these being less covered by a cellular texture than those of the intermediate parts of the limbs. I suppose further, that the application of cold produces a constriction of the extreme vessels on the surface, and at the same time an increase of tone or phlogistic diathesis in the course of them, from which arises an increased impetus of the blood, and at the same time a resistance to the free passage of it, and consequently inflammation and pain. Further, I suppose, that the resistance formed excites the vis medicatrix to a further increase of the impetus of the blood; and, to support this, a cold stage arises, a spasm is formed, and a pyrexia and phlogistic diathesis are produced in the whole system.

cccclix. According to this explanation, the cause of acute rheumatism appears to be exactly analogous to that of the inflammations depending on an increased afflux of blood to a part while it is exposed to the action of cold.

But there seems to be also, in the case of rheumatism, a peculiar affection of the fibres of the muscles. These fibres seem to be under some degree of rigidity, and therefore less easily admit of motion; and are pained upon the exertions of it.

It is also an affection of these fibres which gives an opportunity to the propagation of pains from one joint to another, along the course of the muscles; and which pains are more severely felt in the extremities of the muscles terminating in the joints, because, beyond these, the oscillations are not propagated.

This affection of the muscular fibres attending rheumatism; seems to explain why strains and spasms produce rheumatic affections; and, upon the whole, shows, that with an inflammatory affection of the sanguiferous system, there is also in rheumatism a peculiar affection of the muscular fibres, which has a considerable share in producing the phenomena of the disease.

cccLX. Having thus given my opinion of the proximate causes of rheumatism, I proceed to treat of the cure.

cccLXI. Whatever difficulty may occur with respect to the explanation given (cccLVIII. and cccLIX.), this remains certain, that in acute rheumatism, at least in all those cases which do not arise from direct stimuli, there is an inflammatory affection of the parts, and phlogistic diathesis in the whole system; and upon these is founded the method of cure, which frequent experience has approved of.

cccLXII. The cure therefore requires, in the first place, an antiphlogistic regimen, and, particularly a total abstinence from animal food, and from all fermented or spirituous liquors; substituting a vegetable or milk diet, and the plentiful use of bland diluent drinks.

cccLXIII. Upon the same principle (cccL.) at least with perhaps the same exception as above, blood letting is the chief remedy of acute rheumatism. The blood ought to be drawn in large quantity, and the bleeding is to be repeated in proportion to the frequency, fulness, and hardness of the pulse, and to the violence of the pain. For the most part large and repeated bleedings, during the first days of the disease, seem to be necessary and accordingly have been very much employed; but to this some bounds are to be set; for very profuse

bleedings occasion a slow recovery, and if not absolutely effectual, are ready to produce a chronic rheumatism.

cccclxiv. To avoid that debility of the system, which general bleedings are ready to occasion, the urgent symptom of pain may be often relieved by topical bleedings, and especially when any swelling and redness have come upon a joint, the pain of it may be very certainly relieved by such bleedings ; but as the continuance of the disease seems to depend more upon the phlogistic diathesis of the whole system, than upon the affection of particular parts, so topical bleedings will not always supply the place of the general bleedings proposed above.

cccclxv. To take off the phlogistic diathesis prevailing in this disease, purging may be useful, if procured by medicines which do not stimulate the whole system, such as the neutral salts, and which have, in some measure, a refrigerant power. Purging, however, is not so powerful as bleeding in removing phlogistic diathesis ; and when the disease has become general and violent, frequent stools are inconvenient, and even hurtful, by the motion and pain which they occasion.

cccclxvi. In acute rheumatism, applications to the pained parts are of little service. Fomentations, in the beginning of the disease, rather aggravate than relieve the pains. The rubefacients and camphire are more effectual in relieving the pains ; but generally they only shift the pain from one part into another, and do little towards the cure of the general affection. Blistering, applied to the pained part, may also be very effectual in removing the pain from it ; but will be of little use, except where the pains are much confined to one part.

cccclxvii. The several remedies mentioned from ccccli. to cccccv. moderate the violence of the disease, and sometimes remove it entirely ; but they sometimes fail in this, and leave the cure imperfect. The attempting a cure by large and repeated bleedings, is attended with many inconveniences (see cxl.) ; and the most effectual and safe method of curing this disease, is after some general bleedings for taking off, or at least dimin-

ishing the phlogistic diathesis, to employ sweating, conducted by the rules laid down* CLXVIII. and CLXIX.

CCCCXVIII. Opiates, except wheré they are directed to procure sweat; always prove hurtful in every stage of this disease.

CCCCLXIX. The Peruvian bark has been supposed a remedy in some cases of this disease; but we have seldom found it useful, and in some cases hurtful. It appears to me to be fit in those cases only, in which the phlogistic diathesis is already much abated, and where, at the same time, the exacerbations of the disease are manifestly periodical, with considerable remissions interposed.

CCCCLXX. Calomel, and some other preparations of mercury, have been recommended in the acute rheumatism; but, I believe, they are useful only in cases of the chronic kind, or at least in cases approaching to the nature of these.

CCCCLXXI. Having now treated fully of the cure of the acute rheumatism, I proceed to treat of the cure of the chronic, which is so frequently a sequel of the former.

CCCCLXXII. The phenomena of the purely chronic rheumatism, mentioned in CCCCXXXIX. and CCCCXL. lead me to conclude, that its proximate cause is an atony, both of the blood vessels and of the muscular fibres of the part affected, together with a degree of rigidity, and contraction in the latter, such as frequently attend them in a state of atony.

* Dover's powder, or the pulv. ipeca, comp. is commonly employed, in doses of 15 grains, or a scruple, for this purpose, assisted by proper regimen.

Dr. Fowler, in his reports on the effects of blood letting, sudorifics, and blistering, in this disease, to which I would beg leave to refer the reader, particularly recommends the tincture of guiacum, which, as it possesses a laxative property, he conceives to be far preferable to Dover's powder, in cases attended with costiveness. Of sudorifics in general, as remedies in rheumatism, he thus expresses himself: "Of all the operative antirheumatic remedies which have fallen within my notice, sudorifics seem to be by far the most efficacious, in producing artificial cures. Their curative effects appear to be strongly connected with their operative ones. They have likewise this recommendation, that they are not found to debilitate the patient so much as either repeated blood letting, or the frequent use of purgatives."

CCCLXXIII. Upon this view of the proximate cause, the general indication of cure must be to restore the activity and vigor of the vital principle in the part ; and the remedies for this disease, which experience has approved of, are chiefly such as are manifestly suited to the indication proposed.

CCCLXXIV. These remedies are either external or internal.

The external are the supporting the heat of the part, by keeping it constantly covered with flannel ; the increasing the heat of the part by external heat, applied either in a dry or in a humid form ; the diligent use of the flesh brush, or other means of friction ; the application of electricity in sparks or shocks ; the application of cold water by affusion or immersion ; the application of essential oils of the most warm and penetrating kind ; the application of salt brine ; and, lastly, the employment of exercise, either of the part itself, so far as it can easily bear it ; or of the whole body, by riding or other mode of gestation.

CCCLXXV. The internal remedies are, 1. Large doses of essential oil drawn from resinous substances, such as turpentine ; 2. Substances containing such oils, as guaiac ; 3. Volatile alkaline salts ; 4. These, or other medicines, directed to procure sweat (CLXIX.) ; and, lastly, calomel, or other preparation of mercury, in small doses, continued for some time*.

CCCLXXVI. These (CCCLXIII. CCCLXIV.) are the remedies successfully employed in the purely chronic rheumatism ; and there are still others recommended, as bleeding, general and topical, burning, blistering, and issues ; but these appear to me to be chiefly, perhaps only useful, when the disease still partakes of the nature of acute rheumatism.

* In cases of this nature, the following will likely be of service :

R Antimon. tart.

Opii purif.

Hyd. mur. mit. à à bene trit. gr. v.

Conser. ros. q. s. ut fiant. pilulæ decem, unam quarum capiat omni nocte.

C H A P. XIII.

OF THE TOOTHACH, OR ODONTALGIA.

ccccLXXVII. I HAVE formerly considered this disease as a species of Rheumatism; to be treated upon the same principles as those delivered in the preceding chapter; but now, from more attentive consideration, I am led to consider the toothach as a distinct disease. Whilst the most of what has been delivered in the last chapter proceeds upon the supposition that the rheumatism depends upon a certain state of the blood vessels, and of the motion of the blood in them; without this being produced by the irritation of any acrid matter applied; I judge, that in the toothach, though there are often the same circumstances in the state of the blood vessels as in the cases of rheumatism, these circumstances in toothach always arise from the application of an acrid matter to the nerves of the teeth.

ccccLXXVIII. This disease is often no other than a pain felt in a particular tooth, without any inflammatory affection being at the same time communicated to the neighboring parts. This, however, is rarely the case; and for the most part, together with the pain of the tooth, there is some degree of pain and of inflammatory affection communicated to the neighboring parts, sometimes to the whole of those on the same side of the head with the affected tooth.

ccccLXXIX. This inflammatory affection seems to me to be always an affection of muscles, and of the membranous parts connected with these, without any tendency to suppuration; and such an affection, as is excited by cold in similar parts elsewhere. It is from these circumstances that I conclude the affection to be of the rheumatic kind.

ccccLXXX. It is possible that the muscles and membranes of the jaw may be affected by the same causes

which produce the rheumatism in other parts ; and it is also possible, that arheumatic diathesis at first produced by irritation, may subsist in the muscles and membranes of the jaw, so that the inflammatory affection may be renewed by certain causes without any new application of acrid matter : but I am persuaded that either of these occurrences are very rare, and I have never been able to ascertain any cases of toothach to be of these kinds. I consider it therefore as highly probable, that this rheumatic affection of the jaws which we name toothach, is always dependent upon some immediate application of acrid matter to the nerves of the teeth.

CCCCCLXXXI. It is however to be observed, that this application of acrid matter does not always excite a pain in the tooth itself, or an inflammatory affection of the neighboring parts, but that it very often operates by producing a diathesis only ; so that cold applied to the neighboring parts, does excite both a pain in the tooth, and an inflammatory affection of the neighboring parts which did not appear before.

There seem to be also certain states of the body, which operate upon the same diathesis, so as to produce toothach. Such seems to be the case of pregnant women, who are more liable to toothach than other women. There are probably also some cases of increased irritability which render persons more subject to toothach. Thus women are more liable to the disease than men, and particularly women liable to hysterical affections.

CCCCCLXXXII. The acrid matter producing this disease, seems to be generated first in the hard substances of the teeth ; and as it often appears first upon the external surface of these, it might be suspected to arise from the application of external matters to the teeth ; but as the production of this acrimony is often begun in the internal cavity of the teeth, where the operation, of external matters cannot be suspected, and as even when it begins upon the external parts of the teeth, the operation of the cause is at first in a small portion of the teeth only, that it is difficult to suppose that any matter

externally applied could act in such a partial manner ; so it is presumed, that the acrid matter occasioning the toothach, is produced by some vice originating in the substance of the tooth itself. When it begins upon the external surface, it is on the enamel ; but upon the internal surface, it must be in the bony part. From what causes it arises in either of these substances, I do not at all know ; but I suspect that it often arises from some more general fault in the fluids of the body. The frequent use of mercury, especially when thrown much upon the mouth, and the state of the fluids in scurvy, seem both of them to give a disposition to a caries in the teeth ; and it is possible that some other acrimonious states of the fluids may have the same effect.

CCCCCLXXXIII. A caries in some part of the teeth, whether arising upon their internal surface, or upon their external, proceeding so far as to reach the nerves in the cavity of the teeth, is pretty manifestly the cause of toothach, and of the first attacks of it ; but when the cavity of the teeth has been opened, so that the external air or other matters can reach that cavity, these are often the exciting causes of toothach, and serve to prove in general, that acrid matters applied to the nerves occasion the disease.

CCCCCLXXXIV. What is the nature of the matter produced in the caries of the teeth, I do not understand, nor have I found any proper corrector of it ; but I presume it to be of the putrid kind, as it often taints the breath with a fetid odor.

CCCCCLXXXV. In the cure of this disease, a long experience has shown, that the extraction of the carious tooth proves the most effectual, and very often the only effectual remedy of the disease. But as in some cases this extraction is not proper, and as in many cases it is obstinately avoided, other means of curing the disease, or at least of relieving the pain, have been sought for and much practised.

CCCCCLXXXVI. Among these remedies, those are likely to be the most effectual which entirely destroy the affected nerve, or at least so much of it as is exposed to the

action of the acrid matter in the tooth. When an opening is made into the cavity of the tooth, the nerve of it may be destroyed most certainly by the actual cautery; and it may also possibly be done by the application of potential caustics, either of the alkaline or acid kind*.

CCCCCLXXXVII. When these remedies cannot be rendered effectual, relief may often be obtained by diminishing the sensibility of the nerve affected, by the application of opium, or of the more acrid aromatic oils, directly to the nerve in the tooth.† It appears also that the sensibility of the affected nerve may often be for some time diminished by the external application of opium to the extremities of those nerves in the skin, which are branches of the same fifth pair of nerves with those of the teeth.‡

CCCCCLXXXVIII. When the disease consists entirely in a pain of the nerve of the tooth, without any considerable affection communicated to the neighboring parts, the remedies already mentioned are those especially to be employed; but when the disease consists very much in an inflammatory affection of the muscles and membranes of the jaw, and when at the same time there is little or no access for the above mentioned remedies to the affected nerve, other measures are to be employed for relieving the disease.

CCCCLXXXIX. If the disease be attended with any general phlogistic diathesis of the system, or with any considerable degree of pyrexia, a general bleeding may be useful in relieving the disease: but these circumstances

* One of the most effectual applications of this nature is strong nitrous acid, diluted with three or four times its weight of spirit of wine; a little of this is introduced to the affected part by a hair pencil or cotton.

† R Camphoræ pulv. trit.

Opii purif. à gr. 15.

Olei caryophylli gutt. i. m. f. pilula parti dolenti admovenda,
Or the following, which may be applied on a little cotton:

R Camphoræ, 3 i.

Opii purif. gr. viij.

Olei caryophylli gutt. x.

Alcohol. 3 ij. digere et cola.

‡ The following liniment, rubbed in behind the ear, may be of service:

R Ol. olivar. opt. 3 i.

Camphoræ.

Tinct. opii à à 3 ij.M.

occur very rarely, and the disease is for the most part a purely topical affection, in which, as I observed before, a general bleeding is of very little service. As this disease, however, is a topical inflammation, it might be supposed that topical bleedings would be very useful, and sometimes they are so; but it is seldom that their effects are either considerable or permanent. The reasons of this I take to be, that the disease does not consist in an affection of the blood vessels alone, as in the ordinary cases of rheumatism; but in a peculiar affection of the fibres both of the muscles and of the vessels of the part, induced by irritation. The ineffectualy of topical bleedings is with me a proof of the disease being of the latter kind.

ccccxc. The remedies, therefore, necessary to give relief in this disease, are those which take off the spasm of the vessels, and especially of the muscles and membranes affected. Such are blistering, brought as near to the part affected as can be conveniently done; and such are also increased excretions excited in the neighboring parts, as of the saliva and mucus of the mouth, by the use of acrid masticatories. It is often sufficient to excite a strong sensation in the neighboring parts, as, by eau de luce, spirit of lavender, or Hungary water, snuffed up the nostrils; or by the vitriolic æther properly applied to the cheek. It is upon the same footing that I suppose brandy, or other ardent spirit, held in the mouth is often of service.

ccccxci. There are cases of toothach in which it does not appear that the disease arises from an acrid matter immediately applied to the nerve of a tooth, but from the external application of cold, or some other causes immediately applied to the muscles and membranes of the jaw; and which, therefore, seem to require some remedies different from those above mentioned. But, in all such cases, it is to be suspected, that the effects of cold, or of other such causes, are owing to a diathesis, produced by an acrid matter applied to the nerve of a tooth, and continuing in some measure to act there;

and we have accordingly often found, that the action of those external causes was to be obviated only by the extraction of the tooth from which the diathesis had arisen.

C H A P. XIV.

OF THE GOUT.

ccccxci. THE Gout, not only as it occurs in different persons, but even as it occurs in the same person at different times, is a disease of such various appearance, that it is difficult to render the history of it complete and exact, or to give a character of it that will universally apply. However, I shall endeavor to describe the disease as it most commonly appears, and to mark the varieties of it as well as I can. From such a history I expect that a general character may be given; and such I think is the following, as given in the last edition of our Nosology :

GEN. XXIII. PODAGRA*,

Morbus hæditarius, oriens sine causa externa evidente, sed præunte plerumque ventriculi affectione insolita; pyrexia; dolor ad articulum et plerumque pedis pollici, certe pedum et manuum juncturis, potissimum infestus; per intervalla revertens, et sæpe cum ventriculi et internarum partium affectionibus alternans.

* Var. 1. *Regular Gout*, with a violent inflammation, remaining for a few days, and gradually receding with swelling, itching, and desquamation of the part.

Var. 2. *Atonic Gout*, is accompanied with an atony of the stomach, or of some other internal part, without the expected and usual inflammation of the joints: or with slight and temporary pains; accompanied with dyspepsia, and other symptoms of atony, often alternating with each other.

Var. 3. *Retrograde Gout*, is marked by an inflammation of the joints suddenly disappearing, and an atony of some internal part immediately following.

Var. 4. *Aberrant Gout*, is attended with an inflammation of an internal part; the inflammation of the joint either not preceding, or suddenly disappearing.

ccccxciii. The Gout is generally a hereditary disease; but some persons, without hereditary disposition, seem to acquire it; and, in some, a hereditary disposition may be counteracted by various causes. These circumstances may seem to give exceptions to our general position; but the facts directly supporting it are very numerous.

ccccxciv. This disease attacks especially the male sex; but it sometimes, though more rarely, attacks also the female. The females liable to it are those of the more robust and full habits; and it very often happens to such long before the menstrual evacuation has ceased. I have found it occurring in several females, whose menstrual evacuations were more abundant than usual.

ccccxcv. This disease seldom attacks Eunuchs, and, when it does, they seem to be those who happen to be of a robust habit, to lead an indolent life, and to live very full.

cccxvi. The gout attacks especially men of robust and large bodies, men of large heads, of full and corpulent habits, and men whose skins are covered with a thicker *rete mucosum*, which gives a coarser surface.

ccccxcvii. If, with the ancients, we might ascertain, by certain terms, the temperaments of men, I would say, that the gout attacks especially men of a *cholorico sanguine* temperament, and that it very seldom attacks the purely fanguine or melancholic. It is, however, very difficult to treat this matter with due precision.

ccccxcviii. The gout seldom attacks persons employed in constant bodily labor, or persons who live much upon vegetable aliment. It is also said to be less frequent among those people who make no use of wine or other fermented liquors.

ccccxcix. The gout does not commonly attack men till after the age of five and thirty, and generally not till a still later period. There are, indeed, instances of the gout occurring more early; but these are few in comparison of the numbers which agree with what we have given as the general rule. When the disease does appear early in life, it seems to be in those in whom the

hereditary disposition is very strong, and to whom the remote causes, to be hereafter mentioned, have been applied in a considerable degree.

D. As the gout is a hereditary disease, and affects especially men of a particular habit, its remote causes may be considered as predisponent and occasional.

DI. The predisponent cause, so far as expressed by external appearances, or by the general temperament we have already marked; and physicians have been very confident in assigning the occasional causes; but, in a disease depending so much upon a predisposition, the assigning occasional causes must be uncertain, as, in the predisposed, the occasional causes may not always appear, and, in persons not predisposed, they may appear without effect. This uncertainty must particularly affect the case of the gout; but I shall offer what appears to me most probable on the subject.

DII. The occasional causes of the gout seem to be of two kinds: First, Those which induce a plethoric state of the body: Secondly, Those which, in plethoric habits, induce a state of debility.

DIII. Of the first kind are a sedentary indolent manner of life, a full diet of animal food, and the large use of wine, or of other fermented liquors. These circumstances commonly precede the disease; and, if there should be any doubt of their power of producing it, the fact, however, will be rendered sufficiently probable, by what has been observed in ccccxcviii.

DIV. Of the second kind of occasional causes which induce debility, are, excess in venery; intemperance in the use of intoxicating liquors; indigestion, produced either by the quantity or quality of aliments; much application to study or business; night watching; excessive evacuations; the ceasing of usual labor; the sudden change from a very full to a very spare diet; the large use of acids and asescents; and, lastly, cold applied to the lower extremities.

DV. The first (DIII.) seem to act by increasing the predisposition. The last (DIV.) are commonly the exciting

causes, both of the first attacks, and of the repetitions of the disease.

DVI. It is an inflammatory affection of some of the joints which especially constitutes what we call a paroxysm of the gout. This sometimes comes on suddenly without any warning, but is generally preceded by several symptoms ; such as, the ceasing of a sweating which the feet had been commonly affected with before ; an unusual coldness of the feet and legs ; a frequent numbness, alternating with a sense of prickling along the whole of the lower extremities ; frequent cramps of the muscles of the legs ; and an unusual turgescence of the veins.

DVII. While these symptoms take place in the lower extremities, the whole body is affected with some degree of torpor and languor, and the functions of the stomach in particular are more or less disturbed ; the appetite is diminished, and flatulency, or other symptoms of indigestion, are felt. These symptoms, and those of DVI. take place for several days, sometimes for a week or two, before a paroxysm comes on ; but commonly, upon the day immediately preceding it, the appetite becomes greater than usual.

DVIII. The circumstances of paroxysms are the following : They come on most commonly in the spring, and sooner or later, according as the vernal heat succeeds sooner or later to the winter's cold ; and, perhaps sooner or later also, according as the body may happen to be more or less exposed to vicissitudes of heat and cold.

DIX. The attacks are sometimes felt first in the evening, but more commonly about two or three o'clock of the morning. The paroxysm begins with a pain affecting one foot, most commonly in the ball or first joint of the great toe, but sometimes in other parts of the foot. With the coming on of this pain, there is commonly more or less of a cold shivering, which, as the pain increases, gradually ceases, and is succeeded by a hot stage of pyrexia, which continues for the same time with the pain itself. From the first attack, the pain becomes by

degrees more violent, and continues in this state, with great restlessness of the whole body, till next midnight, after which it gradually relents ; and, after it has continued for twenty four hours from the commencement of the first attack, it commonly ceases very entirely, and with the coming on of a gentle sweat, allows the patient to fall asleep. The patient, upon coming out of this sleep in the morning, finds the pained part affected with some redness and swelling, which, after having continued for some days, gradually abate.

DIX. When a paroxysm has thus come on, although the violent pain, after twenty four hours, be considerably abated, the patient is not entirely relieved from it. For some days, he has every evening a return of more considerable pain and pyrexia, and which continue with more or less violence till morning. After continuing in this manner for several days, the disease sometimes goes entirely off, not to return till after a long interval.

DXI. When the disease, after having thus remained for some time in a joint, ceases very entirely, it generally leaves the person in very perfect health, enjoying greater ease and alacrity in the functions of both body and mind, than he had for a long time before experienced.

DXII. At the beginning of the disease, the returns of it are sometimes only once in three or four years ; but after some time, the intervals become shorter, and the attacks become annual : afterwards, they come twice each year, and at length recur several times during the whole course of autumn, winter, and spring ; and, as it happens, that, when the fits are frequent, the paroxysms become also longer, so, in the advanced state of the disease, the patient is hardly ever tolerably free from it, except perhaps for two or three months in summer.

DXIII. The progress of the disease is also marked by the parts which it affects. At first, it commonly affects one foot only ; afterwards, every paroxysm affects both feet, the one after the other ; and, as the disease continues to recur, it not only affects both feet at once, but, after having ceased in the foot which was secondly

attacked, returns again into the foot first affected, and perhaps a second time also into the other. Its changes of place are not only from one foot to the other, but also from the feet into other joints, especially those of the upper and lower extremities ; so that there is hardly a joint of the body that is not, on one occasion or other, affected. It sometimes affects two different joints at the same time, but more commonly it is severe in a single joint only, and passes successively from one joint to another ; so that the patient's affliction is often protracted for a long time.

DXIV. When the disease has often returned, and the paroxysms have become very frequent, the pains are commonly less violent than they were at first ; but the patient is more affected with sickness, and the other symptoms of the atonic gout, which shall be hereafter mentioned.

DXV. After the first paroxysms of the disease, the joints which have been affected are entirely restored to their former suppleness and strength ; but after the disease has recurred very often, the joints affected do neither so suddenly nor so entirely recover their former state, but continue weak and stiff ; and these effects at length proceed to such a degree, that the joints lose their motion altogether.

DXVI. In many persons, but not in all, after the disease has frequently recurred, concretions of a chalky nature are formed upon the outside of the joints, and for the most part immediately under the skin. The matter seems to be deposited at first in a fluid form, but afterwards becomes dry and firm. In their dry state, these concretions are a friable earthy substance, very entirely soluble in acids. After they have been formed, they contribute, with other circumstances, to destroy the motion of the joint.

DXVII. In most persons who have labored under the gout for many years, a nephritic affection comes on, and discovers itself by all the symptoms which usually attend calculous concretions in the kidneys, and which we shall have occasion to describe in another place. All

that is necessary to be observed here is, that the nephritic affection alternates with paroxysms of the gout, and that the two affections, the nephritic and the gouty, are hardly ever present at the same time. This also may be observed, that children of gouty or nephritic parents commonly inherit one or other of these diseases; but which ever may have been the principal disease of the parent, some of the children have the one, and some the other. In some of them, the nephritic affection occurs alone, without any gout supervening; and this happens to be frequently the case of the female offspring of gouty parents.

DVIII. In the whole of the history already given, I have described the most common form of the disease, and which, therefore, however diversified in the manner I have said, may be still called the regular state of the gout. Upon occasion, however, the disease assumes different appearances; but, as I suppose the disease to depend always upon a certain diathesis or disposition of the system; so every appearance which we can perceive to depend upon that same disposition, I still consider as a symptom and case of the gout. The principal circumstance in what we term the *Regular Gout*, is the inflammatory affection of the joints; and, whatever symptoms we can perceive to be connected with, or to depend upon the disposition which produces that inflammatory affection, but without its taking place, or being present at the same time, we name the *Irregular Gout*.

DIX. Of such irregular gout there are three different states, which I name the *atonic*, the *retrocedent*, and the *misplaced* gout.

DXX. The atonic state is when the gouty diathesis prevails in the system, but from certain causes, does not produce the inflammatory affection of the joints. In this case, the morbid symptoms which appear are chiefly affections of the stomach; such as loss of appetite, indigestion, and its various circumstances of sickness, nausea, vomiting, flatulency, acid eructations and pains in the region of the stomach. These symptoms are frequently accompanied with pains and cramps in several

parts of the trunk, and the upper extremities of the body, which are relieved by the discharge of wind from the stomach. Together with these affections of the stomach, there commonly occurs a costiveness ; but sometimes a looseness with colic pains. These affections of the alimentary canal are often attended with all the symptoms of hypochondriasis ; as dejection of mind, a constant and anxious attention to the slightest feelings, an imaginary aggravation of these, and an apprehension of danger from them.

In the same atonic gout, the viscera of the thorax also are sometimes affected, and palpitations, faintings, and asthma, occur.

In the head also occur headaches, giddiness, apoplectic, and paralytic affections.

DXXI. When the several symptoms now mentioned, occur in habits having the marks of a gouty disposition, this may be suspected to have laid the foundation of them ; and especially when either, in such habits, a manifest tendency to the inflammatory affection has formerly appeared ; or when the symptoms mentioned are intermixed with, and are relieved by some degree of the inflammatory gout. In such cases there can be no doubt of considering the whole as a state of the gout.

DXXII. Another state of the disease I name the *retrocedent* gout. This occurs when an inflammatory state of the joints has, in the usual manner, come on, but which, without arising to the ordinary degree of pain and inflammation, or at least, without these continuing for the usual time, and receding gradually in the usual manner, they suddenly and entirely cease, while some internal part becomes affected. The internal part most commonly affected is the stomach, which is then affected with anxiety, sicknes, vomiting, or violent pain ; but sometimes the internal part is the heart, which gives occasion to a syncope ; sometimes it is the lungs which are affected with asthma ; and sometimes it is the head, giving occasion to apoplexy or palsey. In all these cases, there can be no doubt of the symptoms being all

a part of the same disease, however different the affection may seem to be in the parts which it attacks.

DXXIII. The third state of irregular gout, which we name the *misplaced*, is when the gouty diathesis, instead of producing the inflammatory affection of the joints, produces an inflammatory affection of some internal part, and which appears from the same symptoms that attend the inflammation of those parts arising from other causes.

Whether the gouty diathesis does ever produce such inflammation of the internal parts, without having first produced it in the joints, or if the inflammation of the internal part be always a translation from the joints previously affected, I dare not determine; but, even supposing the latter to be always the case, I think the difference of the affection of the internal part must still distinguish the misplaced from what I have named the Retrocedent Gout.

DXXIV. What internal parts may be affected by the misplaced gout, I cannot precisely say, because I have never met with any cases of the misplaced gout in my practice; and I find no cases of it distinctly marked by practical writers, except that of a pneumonic inflammation.

DXXV. There are two cases of a translated gout; the one of which is an affection of the neck of the bladder, producing pain, strangury, and a catarrhus vesicæ: The other is an affection of the rectum, sometimes by pain alone in that part, and sometimes by haemorrhoidal swellings there. In gouty persons, I have known such affections alternate with inflammatory affections of the joints: But whether to refer those affections to the retrocedent, or to the misplaced gout, I will not presume to determine.

DXXVI. From the history which I have now delivered of the gout, I think it may be discerned under all its various appearances. It is however commonly supposed, that there are cases in which it may be difficult to distinguish gout from rheumatism, and it is possible there may be such cases; but, for the most part, the two diseases

may be distinguished with great certainty, by observing the predisposition, the antecedents, the parts affected, the recurrences of the disease, and its connection with the other parts of the system ; which circumstances, for the most part, appear very differently in the two diseases.

DXXVII. With respect to the gout, our next business is to investigate its proximate cause ; which must be a difficult task, and I attempt it with some diffidence.

DXXVIII. Upon this subject, the opinion which has generally prevailed is, that the gout depends upon a certain morbid matter, always present in the body ; and that this matter, by certain causes, thrown upon the joints or other parts, produces the several phenomena of the disease.

DXXIX This doctrine, however ancient and general, appears to me very doubtful ; for,

First, there is no direct evidence of any morbid matter being present in persons disposed to the gout. There are no experiments or observations which show that the blood, or other humors of gouty persons, are in any respect different from those of other persons. Previous to attacks of the gout, there appear no marks of any morbid state of the fluids ; for the disease generally attacks those persons who have enjoyed the most perfect health, and appear to be in that state when the disease comes on. At a certain period of the disease, a peculiar matter indeed appears in gouty persons (DXVI.) : but this, which does not appear in every instance, and which appears only after the disease has subsisted for a long time, seems manifestly to be the effect, not the cause of the disease. Further, though there be certain acrids which, taken into the body, seem to excite the gout (DIV.), it is probable that these acrids operate otherwise in exciting the disease, than by affording the material cause of it. In general, therefore, there is no proof of any morbid matter being the cause of the gout.

Secondly, The suppositions concerning the particular nature of the matter producing the gout, have been so various and so contradictory to each other, as to allow us to conclude, that there is truly no proof of the existence

of any of them. With respect to many of these suppositions, they are so inconsistent with chemical philosophy, and with the laws of the animal economy, that they must be entirely rejected.

Thirdly, The supposition of a morbidic matter being the cause of the gout, is not consistent with the phenomena of the disease, particularly with its frequent and sudden translations from one part to another.

Fourthly, The supposition is further rendered improbable by this, that if a morbidic matter did exist, its operation should be similar in the several parts which it attacks; whereas it seems to be very different, being stimulant, and exciting inflammation in the joints, but sedative and destroying the tone in the stomach : Which, upon the supposition of particular matter acting in both cases, is not to be explained by any difference in the part affected.

Fifthly, Some facts, alleged in proof of a morbidic matter, are not sufficiently confirmed, such as those which would prove the disease to be contagious. There is, however, no proper evidence of this, the facts given being not only few, but exceptionable ; and the negative observations are innumerable.

Sixthly, Some arguments brought in favor of a morbidic matter, are founded upon a mistaken explanation. The disease has been supposed to depend upon a morbidic matter, because it is hereditary. But the inference is not just ; for most hereditary diseases do not depend upon any morbidic matter, but upon a particular conformation of the structure of the body, transmitted from the parent to the offspring ; and this last appears to be particularly the case in the gout. It may be also observed, that hereditary diseases, depending upon a morbidic matter, always appear much more early in life than the gout commonly does.

Seventhly, The supposition of a morbidic matter being the cause of the gout, has been hitherto useless, as it has not suggested any successful method of cure. Particular suppositions have often corrupted the practice, and have frequently led from those views which might

be useful, and from that practice which experience had approved. Further, though the supposition of a morbidic matter has been generally received, it has been as generally neglected in practice. When the gout has affected the stomach, nobody thinks of correcting the matter supposed to be present there, but merely of restoring the tone of the moving fibres.

Eighthly, The supposition of a morbidic matter is quite superfluous; for it explains nothing, without supposing that matter to produce a change in the state of the moving powers; and a change in the state of the moving powers, produced by other causes, explains every circumstance, without the supposition of a morbidic matter; and, to this purpose, it may be observed, that many of the causes (div) exciting the gout, do not operate upon the state of the fluids, but directly and solely upon that of the moving powers.

Lastly, The supposition of a morbidic matter is also superfluous; because, without any such supposition, I think the disease can be explained in a manner more consistent with its phenomena, with the laws of the animal economy, and with the method of cure which experience has approved.

I now proceed to give this explanation; but, before entering upon it, I must premise some general observations.

DXXX. The first observation is that the gout is a disease of the whole system, or depends upon a certain general conformation and state of the body; which manifestly appears from the facts mentioned from cccc-xciv. to cccccxvii. But the general state of the system depends chiefly upon the state of its primary moving powers; and therefore the gout may be supposed to be chiefly an affection of these.

DXXXI. My second observation is, that the gout is manifestly an affection of the nervous system; in which the primary moving powers of the whole system are lodged. The occasional or exciting causes (div.), are almost all such as act directly upon the nerves and nervous system; and the greater part of the symptoms of

the atonic or retrocedent gout are manifestly affections of the same system. DXX. and DXXII.) This leads us to seek for an explanation of the whole of the disease in the laws of the nervous system, and particularly in the changes which may happen in the balance of its several parts.

DXXXII. My third observation is, that the stomach, which has so universal a consent with the rest of the system, is the internal part that is the most frequently and often very considerably affected by the gout. The paroxysms of the disease are commonly preceded by an affection of the stomach (Dvii.) ; many of the exciting causes (Div.) act first upon the stomach ; and the symptoms of the atonic and retrocedent gout (DXX. DXXII.) are most commonly and chiefly affections of the same organ. This observation leads us to remark, that there is a balance subsisting between the state of the internal and that of the external parts ; and, in particular, that the state of the stomach is connected with that of the external parts so (XLIV.), that the state of tone in the one may be communicated to the other.

DXXXIII. These observations being premised, I shall now offer the following pathology of the gout.

In some persons there is a certain vigorous and pleroric state of the system (ccccxcvi.), which, at a certain period of life, is liable to a loss of tone in the extremities (ccccxcix. DVI.) This is in some measure communicated to the whole system, but appears more especially in the functions of the stomach (Dvii.) When this loss of tone occurs while the energy of the brain still retains its vigor, the vis medicatrix naturæ is excited to restore the tone of the parts ; and accomplishes it by exciting an inflammatory affection in some part of the extremities. When this has subsisted for some days, the tone of the extremities, and of the whole system, are restored, and the patient returns to his ordinary state of health (Dxi.)

DXXXIV. This is the course of things, in the ordinary form of the disease, which we name the *regular gout* ; but there are circumstances of the body, in which this course is interrupted or varied. Thus when the

atony (DVI. DVII.) has taken place, if the reaction (DIX.) do not succeed, the atony continues in the stomach, or perhaps in other internal parts, and produces that state which we have, for reasons now obvious, named the *atonic gout*.

DXXXV. A second case of variation in the course of the gout is, when, to the atony, the reaction and inflammation have to a certain degree succeeded, but from causes either internal or external, the tone of the extremities, and perhaps, of the whole system, is weakened so that the inflammatory state, before it had either proceeded to the degree, or continued for the time, requisite for restoring the tone of the system, suddenly and entirely ceases. Hence the stomach, and other internal parts, relapse into the state of atony ; and perhaps have this increased by the atony communicated from the extremities : All which appears in what we have termed the *retrocedent gout*.

DXXXVI. A third case of variation from the ordinary course of the gout is, when, to the atony usually preceding, an inflammatory reaction fully succeeds : But has its usual determination to the joints by some circumstances prevented ; and is therefore directed to an internal part, where it produces an inflammatory affection, and that state of things which we have named the *misplaced gout*.

DXXXVII. We have thus offered an explanation of the circumstances of the system in the several states of the gout ; and this explanation we suppose to be consistent with the phenomena of the disease, and with the laws of the animal economy. There are indeed, with respect to the theory of the disease, several questions which might be put, to which we have not given any answer. But, though perhaps we could give an answer to many of these questions it does not here appear necessary ; as at present we intend only to establish such general facts with regard to this disease, as may lay a foundation for the cure of it, so far as experience has enabled us to prosecute it. Proceeding, therefore, upon the several parts of the pathology given, as so many matters of fact, I

shall now consider what may be attempted towards the cure of the disease.

DXXXVIII. In entering upon this, I must observe, in the first place, that a cure has been commonly thought impossible ; and we acknowledge it to be very probable that the gout, as a disease of the whole habit, and very often depending upon original conformation, cannot be cured by medicines, the effects of which are always very transitory, and seldom extend to the producing any considerable change of the whole habit.

DXXXIX. It would perhaps have been happy for gouty persons, if this opinion had been implicitly received by them ; as it would have prevented their having been so often the dupes of self interested pretenders, who have either amused them with inert medicines, or have rashly employed those of the most pernicious tendency. I am much disposed to believe the impossibility of a cure of the gout by medicines ; and more certainly still incline to think, that whatever may be the possible power of medicines, yet no medicine for curing the gout has hitherto been found. Although almost every age has presented a new remedy, yet all hitherto offered have very soon been either neglected as useless, or condemned as pernicious.

DXL. Though unwilling to admit the power of medicines, yet I contend, that a great deal can be done towards the cure of the gout by a regimen ; And from what has been observed (ccccxcviii.), I am firmly persuaded that any man who, early in life, will enter upon the constant practice of bodily labor, and of abstinence from animal food, will be preserved entirely from the disease.

Whether there be any other means of radically curing the gout, I am not ready to determine. There are histories of cases of the gout, in which it is said, that by great emotions of mind, by wounds, and by other accidents, the symptoms have been suddenly relieved, and never again returned ; but how far these accidental cures might be imitated by art, or would succeed in other cases, is at least extremely uncertain.

DXLI. The practices proper and necessary in the treatment of the gout, are to be considered under two heads; *first*, As they are to be employed in the intervals of paroxysms ; or, *secondly*, As during the time of these.

DXLII. In the intervals of paroxysms, the indications are, to prevent the return of paroxysms, or at least to render them less frequent, and more moderate. During the time of paroxysms, the indications are, to moderate the violence, and shorten the duration of them as much as can be done with safety.

DXLIII. It has been already observed, that the gout may be entirely prevented by constant bodily exercise and by a low diet ; and I am of opinion, that this prevention may take place even in persons who have a hereditary disposition to the disease. I must add here, that even when the disposition has discovered itself by several paroxysms of inflammatory gout, I am persuaded that labor and abstinence will absolutely prevent any returns of it for the rest of life. These, therefore, are the means of answering the first indication to be pursued in the intervals of paroxysms ; and I must here offer some remarks upon the proper use of these remedies.

DXLIV. Exercise, in persons disposed to the gout, is directed to two purposes : One of these is the strengthening of the tone of the extreme vessels ; and the other, the guarding against a plethoric state. For the former, if exercise be employed early in life, and before intemperance has weakened the body, a very moderate degree of it will answer the purpose ; and for the latter, if abstinence be at the same time observed, little exercise will be necessary.

DXLV. With respect to exercise, this in general is to be observed, that it should never be violent ; for, if violent, it cannot be long continued, and must always endanger the bringing on an atony in proportion to the violence of the preceding exercise.

DXLVI. It is also to be observed, that the exercise of gestation, though considerable and constant, if it be entirely without bodily exercise, will not answer the purpose in preventing the gout. For this end, therefore,

the exercise must be in some measure that of the body; and must be moderate, but at the same time constant, and continued through life.

DXLVII. In every case and circumstance of the gout in which the patient retains the use of his limbs, bodily exercise, in the intervals of paroxysms, will always be useful; and, in the beginnings of the disease, when the disposition to it is not yet strong, exercise may prevent a paroxysm which otherwise might have come on. In more advanced states of the disease, however, when there is some disposition to a paroxysm, much walking will bring it on; either as it weakens the tone of the lower extremities, or as it excites an inflammatory disposition in them; and it is probable, that in the same manner strains or contusions often bring on a paroxysm of the gout.

DXLVIII. Abstinence, the other part of our regimen (DXL.) for preventing the gout, is of more difficult application. If an abstinence from animal food be entered upon early in life, while the vigor of the system is yet entire, we have no doubt of its being both safe and effectual; but if the motive for this diet shall not have occurred till the constitution shall have been broken by intemperance, or by the decline of life, a low diet may then endanger the bringing on an atonic state.

DXLIX. Further, if a low diet be entered upon only in the decline of life, and be at the same time a very great change in the former manner of living, the withdrawing of an accustomed stimulus of the system may readily throw this into an atonic state.

DL. The safety of an abstemious course may be greater or less according to the management of it. It is animal food which especially disposes to the plethoric and inflammatory state, and that food is to be therefore especially avoided; but, on the other hand, it is vegetable aliment of the lowest quality that is in danger of weakening the system too much, by not affording sufficient nourishment; and more particularly, of weakening the tone of the stomach by its acescency. It is therefore a diet of a middle nature that is to be chosen; and milk

is precisely of this kind, as containing both animal and vegetable matter.

As approaching to the nature of milk, and as being a vegetable matter containing the greatest portion of nourishment, the farinaceous seeds are next to be chosen, and are the food most proper to be joined with milk.

DLI. With respect to drink, fermented liquors are useful only when they are joined with animal food, and that by their acescency ; and their stimulus is only necessary from custom. When, therefore, animal food is to be avoided, fermented liquors are unnecessary ; and by increasing the acescency of vegetables, these liquors may be hurtful. The stimulus of fermented or spiritous liquors, is not necessary to the young and vigorous ; and when much employed, impairs the tone of the system. These liquor therefore are to be avoided, except so far as custom and the declining state of the system may have rendered them necessary. For preventing or moderating the regular gout, water is the only proper drink.

DLI. With respect to an abstemious course, it has been supposed, that an abstinence from animal food and fermented liquors, or the living upon milk and farinacea alone, for the space of one year, might be sufficient for a radical cure of the gout : and it is possible, that at a certain period of life, in certain circumstances of the constitution, such a measure might answer the purpose. But this is very doubtful ; and it is more probable that the abstinence must, in a great measure, be continued, and the milk diet be persisted in for the rest of life. It is well known, that several persons who had entered on an abstemious course, and had been thereby delivered from the gout, have however, upon returning to their former manner of full living, had the disease return upon them with as much violence as before, or in a more irregular and more dangerous form.

DLI. It has been alleged, that for preventing the return of the gout, blood letting, or scarifications of the feet, frequently repeated, and at stated times, may be

practised with advantage ; but of this I have had no experience.

DLIV. Exercise and abstinence are the means of avoiding the plethoric state which gives the disposition to the gout, and are, therefore, the means proposed for preventing paroxysms, or, at least, for rendering them less frequent and more moderate. But many circumstances prevent the steadiness necessary in pursuing these measures ; and, therefore, in such cases unless great care be taken to avoid the exciting causes, the disease may frequently return ; and, in many cases, the preventing of paroxysms is chiefly to be obtained by avoiding those exciting causes enumerated in DIV. The conduct necessary for avoiding them, will be sufficiently obvious to persons acquainted with the doctrines of the Hygiene, which I suppose to have been delivered in another place.

DLV. A due attention in avoiding those several causes (DIII. DIV.), will certainly prevent fits of the gout ; and the taking care that the exciting causes be never applied in a great degree, will certainly render fits more moderate when they do come on. But, upon the whole, it will appear, that a strict attention to the whole conduct of life, is in this matter necessary ; and, therefore, when the predisposition has taken place, it will be extremely difficult to avoid the disease.

DLVI. I am indeed firmly persuaded, that, by obviating the predisposition, and by avoiding the exciting causes, the gout may be entirely prevented ; but, as the measures necessary for this purpose will, in most cases, be pursued with difficulty, and even with reluctance, men have been very desirous to find a medicine which might answer the purpose, without any restraint on their manner of living. To gratify this desire, physicians have proposed, and, to take advantage of it, empirics have feigned many remedies, as we have already observed. Of what nature several of these remedies have been, I cannot certainly say ; but, of those, which are unknown, we conclude, from their having been only of temporary fame, and from their having soon fal-

len into neglect, that they have been either inert or pernicious, and, therefore, I make no inquiry after them; and shall now remark only upon one or two known remedies for the gout, which have been lately in vogue.

DLVII. One of these is what has been named in England the Portland Powder. This is not a new medicine, but is mentioned by GALEN, and, with some little variation in its composition, has been mentioned by the writers of almost every age since that time. It appears to have been at times in fashion, and to have again fallen into neglect; and I think that this last has been owing to its having been found to be, in many instances, pernicious. In every instance which I have known of its exhibition for the length of time prescribed, the persons who had taken it were indeed afterwards free from any inflammatory affection of the joints, but they were affected with many symptoms of the atonic gout; and all, soon after finishing their course of the medicine, have been attacked with apoplexy, asthma, or dropsy, which proved fatal.

DLVIII. Another remedy, which has had the appearance of preventing the gout, is an alkali in various forms, such as the fixed alkali, both mild and caustic, lime water, soap, and absorbent earths. Since it became common to exhibit these medicines in nephritic and calculous cases, it has often happened that they were given to those who were at the same time subject to the gout; and it has been observed, that, under the use of these medicines, gouty persons have been longer free from the fits of their disease. That, however, the use of these medicines has entirely prevented the returns of gout, I do not know; because I never pushed the use of those medicines for a long time, being apprehensive that the long continued use of them might produce a hurtful change in the state of the fluids.

DLIX. With respect to preventing the gout, I have only one other remark to offer. As the preventing the gout depends very much on supporting the tone of the stomach, and avoiding indigestion; so costiveness, by occasioning this, is very hurtful to gouty persons.

It is, therefore, necessary for such persons to prevent or remove costiveness, and, by a laxative medicine, when needful ; but it is at the same time proper, that the medicine employed should be such as may keep the belly regular, without much purging. Aloetics, rhubarb, magnesia alba, or flowers of sulphur, may be employed, as the one or the other may happen to be best suited to particular persons.

DLX. These are the several measures (from DLII. to DLIX.) to be pursued in the intervals of the paroxysms; and we are next to mention the measures proper during the time of them.

DLXI. As, during the times of paroxysms, the body is in a feverish state, no irritation should then be added to it ; and every part, therefore, of the antiphlogistic regimen (cxxxi. to cxxxiii.), except the application of cold, ought to be strictly observed.

Another exception to the general rule may occur, when the tone of the stomach is weak, and when the patient has been before much accustomed to the use of strong drink ; for then it may be allowable, and even necessary, to give some animal food, and a little wine.

DLXII. That no irritation is to be added to the system during the paroxysms of gout, except in the cases mentioned, is entirely agreed upon among physicians ; but it is a more difficult matter to determine whether, during the time of paroxysms, any measures may be pursued to moderate the violence of reaction and of inflammation. Dr. Sydenham has given it as his opinion, that the more violent the inflammation and pain, the paroxysms will be the shorter, as well as the interval between the present and next paroxysm longer ; and, if this opinion be admitted as just, it will forbid the use of any remedies which might moderate the inflammation which is, to a certain degree, undoubtedly necessary for the health of the body. On the other hand, acute pain presses for relief ; and, although a certain degree of inflammation may seem absolutely necessary, it is not certain but that a moderate degree of it may answer the purpose ; and it is even probable, that, in many cases,

the violence of inflammation may weaken the tone of the parts, and thereby invite a return of paroxysms. It seems to me to be in this way, that, as the disease advances, the paroxysms become more frequent.

DLXIII. From these last considerations, it seems probable, that, during the time of paroxysms, some measures may be taken to moderate the violence of the inflammation and pain ; and particularly, that, in first paroxysms, and in the young and vigorous, blood letting at the arm may be practised with advantage ; but I am persuaded, that this practice cannot be repeated often with safety ; because blood letting not only weakens the tone of the system, but may also contribute to produce plethora. I believe, however, that bleeding by leeches upon the foot, and upon the inflamed part, may be practised, and repeated with greater safety ; and I have known instances of its having been practised with safety, to moderate and shorten paroxysms ; but how far it may be carried, we have not had experience enough to determine.

DLXIV. Besides blood letting, and the antiphlogistic regimen, it has been proposed to employ remedies for moderating the inflammatory spasm of the part affected, such as warm bathing, and emollient poultices. These have sometimes been employed with advantage and safety ; but, at other times, have been found to give occasion to a retrocession of the gout.

DLXV. Blistering is a very effectual means of relieving and discussing a paroxysm of the gout ; but has also frequently had the effect of rendering it retrocedent.

DLXVI. The stinging with nettles I consider as analogous to blistering ; and I think it probable that it would be attended with the same danger.

DLXVII. The burning with moxa, or other substances, I consider as a remedy of the same kind. I have had, indeed, no evidence of this proving hurtful ; but neither have I had any proper evidence of its having proved a radical cure.

DLXVIII. Camphire, and some aromatic oils, have the power of allaying the pain, and of removing the inflam-

mation from the part affected ; but these remedies commonly make the inflammation only shift from one part to another, and, therefore, with the hazard of its falling upon a part where it may be more dangerous ; and they have sometimes rendered the gout retrocedent.

DLXIX. From these reflections (DLXIV. et seq.), it will appear, that some danger must attend every external application to the parts affected, during a paroxysm ; and that, therefore, the common practice of committing the person to patience and flannel alone, is established upon the best foundation.

DLXX. Opiates give the most certain relief from pain ; but, when given in the beginning of gouty paroxysms, occasion these to return with greater violence. When, however, the paroxysms shall have abated in their violence, but still continue to return, so as to occasion painful and restless nights, opiates may be then given with safety and advantage, especially in the case of persons advanced in life, and who have been often affected with the disease.

DLXXI. When, after paroxysms have ceased, some swelling and stiffness shall remain in the joints, these symptoms are to be discussed by the diligent use of the flesh brush.

DLXXII. Purging, immediately after a paroxysm, will be always employed with the hazard of bringing it on again.

DXXIII. I have now finished what has occurred to be said upon the means of preventing and curing the regular gout, and shall now consider its management when it has become irregular, of which, as I have observed above, here are three different cases.

DLXXIV. In the first case, which I have named the Atonic Gout, the cure is to be accomplished by carefully avoiding all debilitating causes, and by employing, at the same time, the means of strengthening the system in general, and the stomach in particular.

DLXXV. For the avoiding debilitating causes, I must refer to the doctrines of the Hygieine, as in DLIV.

DLXXVI. For strengthening the system in general, I must recommend frequent exercise on horseback, and moderate walking. Cold bathing also may answer the purpose, and may be safely employed, if it appear to be powerful in stimulating the system, and be not applied when the extremities are threatened with any pain.

For supporting the tone of the system in general, when threatened with atonic gout, some animal food ought to be employed, and the more acescent vegetables ought to be avoided. In the same case, some wine also may be necessary ; but it should be in moderate quantity, and of the least acescent kinds ; and, if every kind of wine shall be found to increase the acidity of the stomach, ardent spirits and water must be employed.

DLXXVII. For strengthening the stomach, bitters and the Peruvian bark may be employed ; but care must be taken, that they be not constantly employed for any great length of time. Compare DLVII.

The most effectual medicine for strengthening the stomach is iron, which may be employed under various preparations ; but to me the best appears to be the rust in fine powder, which may be given in very large doses.

For supporting the tone of the stomach, aromatics may be employed, but should be used with caution, as the frequent and large use of them may have an opposite effect ; and they should, therefore, be given only in compliance with former habits, or for palliating present symptoms.

When the stomach happens to be liable to indigestion, gentle vomits may be frequently given ; and proper laxatives should be always employed, to obviate or to remove costiveness.

DLXXVIII. In the atonic gout, or in persons liable to it, to guard against cold is especially necessary ; and the most certain means of doing this, is by repairing to a warm climate during the winter season.

DLXXIX. In the more violent cases of the atonic gout, blistering the lower extremities may be useful ; but that remedy should be avoided when any pain threatens the

extremities. In persons liable to the atonic gout, issues may be established in the extremities, as in some measure a supplement to the disease.

DLXXX. A second case of the irregular gout, is that which I have named the Retrocedent. When this affects the stomach and intestines, relief is to be instantly attempted by the free use of strong wines, joinded with aromatics, and given warm ; or if these shall not prove powerful enough, ardent spirits must be employed, and are to be given in a large dose. In moderate attacks, ardent spirits impregnated with garlic, or with asafœtida, may be employed ; or, even without the ardent spirits, a solution of asafœtida with the volatile alkali, may answer the purpose. Opiates are often an effectual remedy, and may be joined with aromatics, as in the Electuarium Thebaicum ; or they may be usefully joined with volatile alkali and camphire. Musk has likewise proved useful in this disease.

When the affection of the stomach is accompanied with vomiting, this may be encouraged, by taking draughts of warm wine, at first with water, and afterwards without it ; having at length recourse, if necessary, to some of the remedies above mentioned, and particularly the opiates.

In like manner, if the intestines be affected with diarrhoea, this is to be at first encouraged, by taking plentifully of weak broth ; and when this shall have been done sufficiently, the tumult is to be quieted by opiates.

DLXXXI. When the retrocedent gout shall affect the lungs, and produce asthma, this is to be cured by opiates, by antispasmodics, and perhaps by blistering on the breast or back.

DLXXXII. When the gout, leaving the extremities, shall affect the head, and produce pain, vertigo, apoplexy, or palsy, our resources are very precarious. The most probable means of relief is blistering the head ; and if the gout shall have receded very entirely from the extremities, blisters may be applied to these also.

Together with these blisters, aromatics, and the volatile alkali, may be thrown into the stomach.

DLXXXIII. The third case of the irregular gout is what I have named the Misplaced, that is, when the inflammatory affection of the gout, instead of falling upon the extremities, falls upon some internal part. In this case, the disease is to be treated by blood letting, and by such other remedies as would be proper in an idiopathic inflammation of the same parts.

DLXXXIV. Whether the translation so frequently made from the extremities to the kidneys, is to be considered as an instance of the misplaced gout, seems, as we have said before, uncertain : but I am disposed to think it something different ; and therefore am of opinion, that in the Nephralgia Calculosa produced upon this occasion, the remedies of inflammation are to be employed no farther than they may be otherwise sometimes necessary in that disease, arising from other causes than the gout.

BOOK III.

OF EXANTHEMATA*,

OR ERUPTIVE FEVERS.

INTRODUCTION.

DLXXXV. THE diseases comprehended under this title, which make the third Order of Pyrexiae in our Nosology, are in general such as do not arise but upon occasion of a specific contagion applied, which first produces fever, and afterwards an eruption upon the surface of the body; and which diseases, for the most part, affect persons but once in the course of their lives.

DLXXXVI. Whether the character of the Order may be thus limited, or if the Order may be allowed to comprehend also the eruptive fevers produced by a matter generated in the body itself, and likewise those cases of eruption which do not depend upon contagion, or upon a matter generated before the fever, but upon a matter generated in the course of the fever, I am not ready to determine. Of the diseases enumerated by the Nosologists as *Exanthemata*, there are certainly three different kinds, which may be distinguished by the circumstances mentioned in this and the preceding para-

* Contagious diseases, attacking a person only once in the course of life; commencing with fever; at a certain period of the disease, pimples make their appearance, often in great number and small, spread over the skin.
Syst. Nof.

graph. Of the first kind are the small pox, the Chicken pox, the Measles, the Scarlet Fever, and the Plague. Of the second kind seems to be the Erysipelas ; and of the third kind I judge the Miliaria and Petechia to be. But as I am not sufficiently confident in the facts which should support these distinctions, or which would enable us to apply them in all cases ; I go on in this book to treat of almost all the exanthemata enumerated by preceding Nosologists, with only some difference in the arrangement from what it was in my former editions.

C H A P. I.

OF THE SMALL POX*.

DLXXXVII. THE small pox is a disease arising from a contagion of a specific nature, which first produces a fever, and on the third or fourth day thereof, produces an eruption of small red pimples. These are afterwards formed into pustules, containing a matter, which in the course of eight days from the time of the eruption, is changed into pus. After this, the matter dries, and falls off in crusts.

DLXXXVIII. This is a general idea of the disease ; but there are two particular forms or varieties of it, well known under the appellations of the *Distinct*, and *Confluent*, which require to be specially described.

DLXXXIX. In the former, or the distinct small pox, the eruptive fever is moderate, and appears to be evidently of the inflammatory kind, or what we name a Synocha. It generally comes on about mid day, with

* *Gen. Contagious synocha*, with vomiting and pain upon pressure of the epigastrum. On the third day, an eruption of phlegmonic pimples, appears, which is completed on the fifth ; in the space of eight days they run into suppuration, and terminate in crusts, often leaving depressed scars or pits in the skin.

Species 1. Distinct small pox, attended with a few distinct, circular, and elevated pustules ; the fever ceases after the completion of the eruption.

Species 2. Confluent small pox, attended with numerous confluent pustules not regularly circumscribed, little elevated, and flaccid ; the fever continues after the eruption. *Syn. Nof.*

some symptoms of a cold stage, and commonly with a considerable langor and drowsiness. A hot stage is soon formed, and becomes more considerable on the second and third days. During this course, children are liable to frequent startings from their slumbers ; and adults, if they are kept a bed, are disposed to much sweating. On the third day, children are sometimes affected with one or two epileptic fits. Towards the end of the third day, the eruption commonly appears, and gradually increases during the fourth ; appearing first upon the face, and successively on the inferior parts, so as to be completed over the whole body on the fifth day.

From the third day, the fever abates ; and against the fifth, it entirely ceases. The eruption appears first in small red spots, hardly eminent, but by degrees rising into pimples. These are generally upon the face in small number ; but even when more numerous, they are separate and distinct from one another. On the fifth or sixth day, a small vesicle, containing an almost colorless or whey colored fluid, appears upon the top of each pimple. For two days, these vesicles increase in breadth only, and there is a small hollow pit in their middle ; so that it is only against the eighth day that they are raised into spheroidal pustules.

These vesicles or pustules, from their first formation, continue to be surrounded with an exactly circular inflamed margin, which, when the pustules are numerous, diffuses some inflammation over the neighboring skin, so as to give somewhat of a damask rose color to the spaces between the pustules. As the pustules increase in size, if they be numerous on the face, against the eighth day the whole of the face becomes considerably swelled ; and in particular, the eyelids are so much swelled as entirely to shut the eyes.

As the disease thus proceeds the matter in the pustules becomes by degrees more opaque and white, and at length of a yellowish color. On the eleventh day, the swelling of the face is abated, and the pustules seem quite full. On the top of each a darker spot appears ; and at

this place the pustule on the eleventh day, or soon after, is spontaneously broken, and a portion of the matter oozes out ; in consequence of which the pustule is shrivelled, and subsides ; while the matter oozing out dries, and forms a crust upon its surface. Sometimes a little only of the matter oozes out ; and what remains in the pustule becomes thick, and even hard. After some days, both the crusts and the hardened pustules fall off, leaving the skin, which they covered, of a brown red color ; and it is only after many days that the skin in these places resumes its natural color. In some cases, where the matter of the pustules has been more liquid, the crusts formed by it are later in falling off, and the part they covered suffers some disquamation, which leaves in it a small pit or hollow.

This is the course of things on the face ; and successively the pustules, on the rest of the body take the same. The matter of the pustules, on the arms and hands, is frequently absorbed ; so that, at the height of the disease, these pustules appear as empty vesicles. On the tenth and eleventh days, as the swelling of the face subsides, a swelling arises in the hands and feet ; but which again subsides as the pustules come to maturity.

When the pustules on the face are numerous, some degree of pyrexia appears on the tenth and eleventh days, but disappears again after the pustules are fully ripened ; or perhaps remains in a very slight degree till the pustules on the feet have finished their course. It is seldom that in the distinct small pox the fever continues longer.

When the pustules on the face are numerous, some uneasiness in the throat, with a hoarseness of the voice, comes on upon the sixth or seventh day, and a thin liquid is poured out from the mouth. These symptoms increase with the swelling of the face ; and the liquids of the mouth and throat becoming thicker, are more difficultly thrown out. There is at the same time some difficulty of swallowing ; so that liquids taken in to be swallowed are frequently rejected, or thrown out by the nose. But all these affections of the fauces abate as the swelling of the face subsides.

DXC. In the other form of small pox, or what is called the Confluent, the course of the disease is, in general, the same with that we have described ; but the symptoms of every stage are more violent, and several of the circumstances are different.

In particular, the eruptive fever is more violent. The pulse is more frequent and more contracted, approaching to that state of pulse which is found in the typhus. The coma is more considerable, and there is frequently a delirium. Vomiting also is a common symptom, especially at the coming on of the disease. In very young infants, epileptic fits are sometimes frequent on the first days of the disease, and sometimes prove fatal before any eruption appears ; or they usher in a very confluent and putrid small pox.

DXCI. The eruption appears more early on the third day, and it is frequently preceded or accompanied with an erysipelatous efflorescence. Sometimes the eruption appears in clusters, like that of the measles. When the eruption is completed, the pimplies are always more numerous upon the face, and at the same time smaller and less eminent. After the eruption, the fever suffers some remission, but never goes off entirely ; and after the fifth or sixth day, it again increases, and continues considerable through the remaining course of the disease.

The vesicles formed on the tops of the pimplies appear sooner ; and while they increase in breadth, do not retain a circular, but are every way of an irregular figure. Many of them run into one another, insomuch that very often the face is covered rather with one vesicle than with a number of pustules. The vesicles, so far as they are any ways separated, do not arise to a spheroidal form, but remain flat and sometimes the whole of the face is of an even surface. When the pustules are in any measure separated, their circumference is not bounded by an inflamed margin, and the part of the skin that is free from pustules is commonly pale and flaccid.

The liquor that is in the pustules changes from a clear to an opaque appearance, and becomes whitish or

brownish, but never acquires the yellow color and thick consistence that appear in the distinct small pox,

DXCII. The swelling of the face which attends the distinct small pox, when they are numerous, and almost then only, always attends the confluent, comes on more early, and arises to a greater degree; but abates on the tenth day, and on the eleventh still more. At this time the pustules or vesicles break, and, shrivelling, pour out a liquor that is formed into brown or black crusts, which do not fall off for many days after. Those of the face, in falling off, leave the parts they cover subject to a desquamation, which pretty certainly produces pittings.

On the other parts of the body, the pustules of the confluent small pox are more distinct than upon the face, but never acquire the same maturity and consistence of pus, as in the properly distinct kind.

The salivation, which only sometimes attends the distinct small pox, very constantly attends the confluent; and both the salivation and the affection of the fauces above mentioned, are, especially in adults, in a higher degree. In infants, a diarrhoea comes frequently in place of the salivation.

In the confluent small pox, there is often a considerable putrescency of the fluids, as appears from petechiae, from serous vesicles, under which the skin shows a disposition to gangrene, and from bloody urine, or other haemorrhagy, all which symptoms frequently accompany this disease.

In the confluent small pox, the fever, which had only suffered a remission from the time of eruption to that of maturation, is often, at or immediately after this period, renewed with considerable violence. This is what has been called the Secondary Fever; and is, in different cases, of various duration and event.

DXCIII. We have thus endeavored to describe the various circumstances of the small pox; and from the difference of these circumstances, the event of the disease may be determined. The whole of the prognosis may be nearly comprised in the following propositions:

The more exactly the disease retains the form of the distinct kind, it is the safer ; and the more completely the disease takes the form of the confluent kind, it is the more dangerous.

It is only when the distinct kind shows a great number of pustules on the face, or otherwise, by fever or putrefcency, approaches to the circumstances of the confluent, that it is attended with any danger.

In the confluent small pox there is always danger, and this is always more considerable and certain, according as the fever is more violent and permanent, and especially as the marks and symptoms of putrefcency are more evident.

When the putrid disposition is very great, the disease sometimes proves fatal before the eighth day ; but, in most cases, it is on the eleventh that death happens, and sometimes it is put off till the fourteenth or seventeenth day.

Though the small pox should not be immediately fatal, the more violent kinds are often followed by a morbid state of the body, of various kind and event. These consequences, as I judge, may be imputed sometimes to an acrid matter produced by the preceding disease, and deposited in different parts, and sometimes to an inflammatory diathesis produced, and determined to particular parts of the body.

DXCIV. It is, I think, agreed among practitioners, that, in the different cases of small pox, the difference chiefly depends upon the appearance of distinct or confluent ; and, from the above description of these kinds, it will appear, that they chiefly differ in the period of the eruption, in the number of pustules produced, in the form of the pustules, in the state of the matter contained in them, in the continuance of the fever, and, lastly, in the danger of the disease.

DXCV. Upon inquiring into the causes of these differences, we might readily suspect, that they depended upon a difference of the contagion producing the disease. This, however, is not probable ; for there are innumerable instances of the contagion, arising from a person la-

boring under the small pox of the distinct kind, producing the confluent, and, on the contrary. Since the practice of inoculation became frequent, we have known the same variolous matter produce in one person the distinct, and in another the confluent small pox. It is, therefore, highly probable, that the difference of the small pox does not depend upon any difference of the contagion, but upon some difference in the state of the persons to whom it is applied, or in the state of certain circumstances concurring with the application of the contagion.

DXCVI. To find out wherein the difference in the state of the persons to whom the contagion of the small pox is applied consists, I observe, that the difference between the distinct and confluent small pox consists especially in the number of pustules produced, which, in the distinct, are generally few ; in the confluent, always many. If, therefore, we shall be able to discover what, in the state of different persons, can give occasion to more or fewer pustules, we shall probably be able to account for all the other differences of the distinct and confluent small pox.

DXCVII. It is evident, that the contagion of the small pox is a ferment with respect to the human fluids, and assimilates a great part of them to its own nature ; and it is probable, that the quantity thus assimilated is, in proportion to the bulk of their several bodies, nearly the same in different persons*. This quantity passes again out of the body, partly by insensible perspiration, and partly by being deposited in pustules ; but if the quantities generated be nearly equal, the quantities passing out of the body by the two ways mentioned are

* This opinion about the quantity assimilated being in proportion to the bulk of the several bodies, is even divested of the usual plausibility which attends the hypothetical reasonings of our author. The idea of the assimilation of part of the fluids, seems to have been adopted rather from reasoning *a priori*, than from any direct evidence. The blood taken from persons laboring under small pox, has been found incapable of communicating the disease to others. It is likewise observed, that whatever tends to moderate the violence of the eruptive fever, renders the disease milder, and diminishes the quantity and virulence of the subsequent eruption. Hence it appears probable, that the eruptive fever is the cause of the symptoms which supervene.

very unequal in different persons ; and, therefore, if we can explain the causes which determine more to pass by the one way than by the other, we may thereby discover the causes which give occasion to more pustules in one person than in another.

DXCVIII. The causes which determine more of the variolous matter to pass by perspiration, or to form pustules, are probably certain circumstances of the skin, that determine more or less of the variolous matter to stick in it or to pass freely through it.

DXCIX. The circumstance of the skin, which seems to determine the variolous matter to stick in it, is a certain state of inflammation, depending much upon the heat of it. Thus, we have many instances of parts of the body, from being more heated, having a greater number of pustules than other parts. In the present practice of inoculation in which few pustules are produced, much seems to be owing to the care that is taken to keep the skin cool. Parts covered with plasters, especially with those of a stimulant kind, have more pustules than other parts. Further, certain circumstances, such as adult age, and full living, determining to a phlogistic diathesis, seem to produce a greater number of pustules ; while the contrary circumstances have contrary effects.

DC. It is therefore probable, that an inflammatory state of the whole system, and more particularly of the skin, gives occasion to a greater number of pustules ; and the causes of this may likewise produce most of the other circumstances of the confluent small pox ; such as the period of eruption ; the continuance of the fever ; the effusion of a more putrescent matter, and less fit to be converted into pus ; and, what arises from thence, the form and other circumstances of the pustules.

DCI. Having thus attempted to account for the chief difference which occurs in the state of the small pox, we shall now try the truth of our doctrine, by its application to practice.

DCII. In considering the practice, we view it first, in general, as suited to render the disease more generally benign and safe, and this by the practice of inoculation.

DCIII. It is not necessary here to describe the operation of inoculating ; and what we name the practice of inoculation, comprehends all the several measures which precede or follow that operation, and are supposed to produce its salutary effects.

These measures are chiefly the following :

1. The choosing for the subject of inoculation, persons otherwise free from disease, and not liable, from their age or other circumstances, to any incidental disease.

2. The choosing a person at the time of life most favorable to a mild disease.

3. The choosing for the practice a season the most conducive to the mildness of the disease.

4. The preparing the person to be inoculated, by abstinence from animal food, for some time before inoculation.

5. The preparing the person by courses of mercurial and antimonial medicines.

6. The taking care, at the time of inoculation, to avoid cold, intemperance, fear, or other circumstances which might aggravate the future disease.

7. After these preparations and precautions, the choosing a fit matter to be employed in inoculation, by taking it from a person of a sound constitution, and free from any disease, or suspicion of it ; by taking it from a person who has had the small pox of the most benign kind ; and, lastly, by taking the matter from such persons, as soon as it has appeared in the pustules, either in the part inoculated, or on other parts of the body.

8. The introducing, by inoculation, but a small portion of the contagious matter.

9. After inoculation, the continuing the vegetable diet, as well as the employment of mercurial and antimonial medicines, and, at the same time, frequently employing purgatives.

10. Both before and after inoculation, taking care to avoid external heat, either from the sun, artificial fires, warm chambers, much clothing, or being much in bed ;

and, on the contrary, exposing the person to a free and cool air.

11. Upon the appearance of the eruptive fever, the rendering that moderate by the employment of purgatives, by the use of cooling and antiseptic acids, and especially, by exposing the person frequently to a cool, and even a cold air, at the same time giving freely of cold drink.

12. After the eruption, continuing the application of cold air, and the use of purgatives, during the course of the disease, till the pustules are fully ripened.

DCIV. These are the measures proposed and practised in the latest and most improved state of inoculation ; and the advantages obtained by the whole of the practice, or at least by most of the measures above mentioned, are now ascertained, by a long experience, to amount to this, That, in ninety nine cases of the hundred, inoculation gives a distinct small pox only, and that also very generally of the mildest form ; but it will still be useful, for the proper conduct of inoculation, to consider the importance and utility of the several measures above mentioned, that we may thereby more exactly determine upon what the advantages of inoculation more certainly depend.

DCV. As the common infection may often seize persons laboring under another disease, which may render the small pox more violent, it is obvious, that inoculation must have a great advantage, by avoiding such concurrence. But, as the avoiding such concurrence may often, in the mean while, leave persons exposed to the common infection, it merits inquiry, whether every diseased state should restrain from the practice of inoculation, or what are the particular diseases that should do so. This is not yet sufficiently ascertained by observation ; and we have frequently remarked, that the small pox have often occurred with a diseased state of the body, without being thereby rendered more violent. In particular, we have observed, that a scrophulous habit, or even the presence of scrophula, did not render the small pox more violent ; and we have ob-

served also, that several diseases of the skin are equally innocent. I am of opinion, that they are the diseases of the febrile kind, or ailments ready to induce or aggravate a febrile state, that especially give the concurrent which is most dangerous with the small pox. I dare not attempt any general rules; but I am disposed to maintain, that though a person be in a diseased state, if that state be of uncertain nature and effect, and, at the same time, the small pox be exceedingly rife, so as to render it extremely difficult to guard against the common infection, it will always be safer to give the small pox by inoculation, than to leave the person to take them by the common infection.

DCVI. Though inoculation has been practised with safety upon persons of all ages; yet, from what has actually occurred in the cases of common infection, and from several other considerations, there is reason to conclude, that adults are more liable to a violent disease than persons of younger years. At the same time, it is observed, that children, in the time of their first dentition, are liable, from this irritation, to have the small pox rendered more violent; and that infants, before the time of dentition, upon receiving the contagion of the small pox, are liable to be affected with epileptic fits, which frequently prove fatal. It is, therefore, upon the whole, evident, that though circumstances may admit, and even rendered inoculation at any age proper, yet, for the most part, it will be still more adviseable to choose persons at an age, after the first dentition is over, and before the time of puberty.

DCVII. Though inoculation has been practised with safety at every season of the year, yet as it is certain, that the cold of winter may increase the inflammatory, and the heats of summer increase the putrescent state of the small pox, it is highly probable, that inoculation may have some advantage, from avoiding the extremes either of heat or cold.

DCVIII. Although the original temperament and constitutions of men are not to be readily changed, it is sufficiently certain, that the conditions of the human

body may, by various causes, in many respects be occasionally very much changed : And therefore, as the use of animal food may increase both the inflammatory and putrescent state of the human body, so it must render persons, on receiving the contagion of the small pox, less secure against a violent disease ; and therefore inoculation may derive some advantage from abstinence from animal food for some time before the inoculation is performed : But I am of opinion, that a longer time than that usually prescribed may be often necessary ; and I am persuaded, that the Scottish mothers who avoid giving their children animal food till they are past the small pox, render this disease in them of a milder kind.

DCIX. I cannot deny that mercurial and antimonial medicines may have some effect in determining to a more free perspiration, and therefore may be of some use in preparing a person for the small pox ; but there are many observations which render me doubtful as to their effect. The quantity of both these medicines, particularly of the antimony commonly employed, is too inconsiderable to produce any effect. It is true that the mercurials have often been employed more freely ; but even their salutary effects have not been evident, and their mischievous effects have sometimes appeared. I doubt therefore, upon the whole, if inoculation derives any advantage from these pretended preparatory courses of medicines.

DCX. As it has been often observed, in the case of almost all contagions, that cold, intemperance, fear, and some other circumstances, concurring with the application, of the contagion, have greatly aggravated the future disease, so it must be the same in the case of the small pox ; and it is undoubted, that inoculation must derive a great, and perhaps its principle advantage, from avoiding the concurrences above mentioned.

DCXI. It has been commonly supposed that inoculation has derived some advantage from the choice of the matter employed in it ; but, from what has been observed in DCXV, it must appear very doubtful if any choice be

necessary, or can be of any benefit in determining the state of the disease.

DCXII. It has been supposed by some, that inoculation has an advantage, by introducing a small portion only of the contagious matter : But this rests upon an uncertain foundation. It is not known what quantity is introduced by the common infection, and it may be a small quantity only. Although it were larger than that thrown in by inoculation, it is not ascertained that the circumstance of quantity would have any effect. A certain quantity of ferment may be necessary to excite fermentation in a given mass ; but, that quantity given, the fermentation and assimilation are extended to the whole mass ; and we do not find that a greater quantity than is just necessary, either increases the activity of the fermentation, or more certainly secures the assimilation of the whole. In the case of the small pox, a considerable difference in the quantity of contagious matter introduced, has not discovered any effect in modifying the disease.

DCXIII. Purging has the effect of diminishing the activity of the sanguiferous system, and of obviating its inflammatory state. It is therefore probable, that the frequent use of cooling purgatives is a practice attending inoculation which may be of considerable advantage ; and probably it is also useful by diminishing the determination to the skin. It appears to me, that mercurials and antimonials, as they are commonly managed, are useful only as they make a part of the purging course.

DCXIV. It is probable, that the state of the small pox depends very much upon the state of the eruptive fever, and particularly upon moderating the inflammatory state of the skin ; and therefore it is probable, that the measures taken for moderating the eruptive fever, and inflammatory state of the skin, afford the greatest improvement which has been made in the practice of inoculation. The tendency of purging, and the use of acids for this purpose, is sufficiently obvious ; and upon the same grounds, we should suppose that blood letting

might be useful ; but probably this has been omitted, for the same reason that perhaps might have led to the omission of other remedies also, which is, that we have found a more powerful and effectual one in the application of cold air, and the use of cold drink. Whatever doubts or difficulties our theory might present to us on this subject, they may be entirely neglected, as the practice of Indostan had long ago, and the practice of this country has lately, by a large and repeated experience, ascertained the safety and efficacy of this remedy ; and as it may, and can be more certainly employed with the practice of inoculation, than it can be in cases of common infection, it must give a singular advantage to the former.

DCXV. After the eruption, when a few pimples only have appeared on the face, the continuing the application of cold air, and the employment of purgatives, has indeed been the practice of many inoculators : but, I think, these practices cannot be said to give any peculiar advantages to inoculation ; for when the state of the eruption is determined, when the number of pustules is very small, and the fever has entirely ceased, I hold the safety of the disease to be absolutely ascertained, and the further use of remedies entirely superfluous. In such cases, I judge the use of purgatives to be not only unnecessary, but that they may be often hurtful.

DCXVI. I have thus considered the several circumstances and practices accompanying inoculation, and have endeavored to ascertain the utility and importance of each. Upon the whole, I hope I have sufficiently ascertained the general utility and great advantage of this practice, especially consisting in this, that if certain precautions, preparations, and remedies are of importance, all of them can be employed with more certainty in the practice of inoculation, than in the case of common infection.

It remains now that I should offer some remarks on the conduct of the small pox, as received by infection, or even when, after inoculation, the symptoms shall prove violent. The latter sometimes happens, although every precaution and remedy have been employed.

The cause of this is not well known ; but it appears to me to be commonly owing to a disposition of the fluids to putrefaction. But however this may be, it will appear, that not only in the case of common infection, but even in that of inoculation, there may be occasion for studying the conduct of this disease, in all its possible varying circumstances.

DCXVII. When, from the prevailing of small pox as an epidemic, and more especially when it is not known that a person not formerly affected with the disease has been exposed to the infection, if such person should be seized with the symptoms of fever, there can be little doubt of its being an attack of the small pox ; and therefore he is to be treated in every respect as if the disease had been received by inoculation. He is to be freely exposed to a cool air, to be purged, and to have cooling acids given liberally*.

DCXVIII. If these measures moderate the fever, nothing more is necessary : But if the nature of the fever attacking a person be uncertain ; or if, with suspicions of the small pox, the symptoms of the fever be violent ; or even, if knowing the disease to be the small pox, the measures mentioned **DCXVII.** shall not moderate the fever sufficiently, it will be proper to let some blood ; and

* Dr. Currie, encouraged by the success which attended the cold affusion in typhus, has extended its application to other febrile distempers, and with the happiest effects. The following case, selected from his Medical Reports, illustrates the advantages derived from this practice in small pox. "In the autumn of 1794, J. J. an American gentleman, in the 24th year of his age, and immediately on his landing in Liverpool, was inoculated under my care. He sickened on the seventh day and the eruptive fever was very considerable. He had a rapid and feeble pulse, a fetid breath, with pain in the head, back, and loins. His heat rose in a few hours to 107° , and his pulse beat 119 times in the minute. I encouraged him to drink largely of cold water and lemonade; and threw three gallons of cold brine over him. He was in a high degree refreshed by it. The eruptive fever abated in every respect; an incipient delirium subsided; the pulse became slower, the heat was reduced, and tranquil sleep followed. In the course of twenty four hours, the affusion was repeated three or four different times at his own desire; a general direction having been given him to call for it as often as the symptoms of fever returned. The eruption, though more numerous than is usual from inoculation, was of a favorable kind. There was little or no secondary fever, and he recovered rapidly." During the eruptive fever chiefly, are these advantages to be derived from the cold affusion; and it should always, as in typhus, be regulated by "the actual state of the patient's heat, and of his sensation of heat."

this will be more especially proper, if the person be an adult, of a phlethoric habit, and accustomed to full living.

DCXIX. In the same circumstances, we judge it will be always proper to give a vomit, as useful in the commencement of all fevers, and more especially in this, where a determination to the stomach appears from pain and spontaneous vomiting.

DCXX. It frequently happens, especially in infants, that during the eruptive fever of the small pox, convulsions occur. Of these, if only one or two fits appear on the evening preceding the eruption, they give a favorable prognostic of a mild disease, and require no remedy; but if they occur more early, and be violent and frequently repeated, they are very dangerous, and require a speedy remedy. For this purpose, bleeding is hardly ever of service; blistering always comes too late; and the only remedy I have found effectual, is an opiate given in a large dose.

DCXXI. These are the remedies necessary during the eruptive fever; and if, upon the eruption, the pimples upon the face be very few and distinct, the disease is no further of any danger, requires no remedies, and the purgatives which, as has been said before, are by some practitioners continued, prove often hurtful.

But when, upon the eruption, the pimples on the face are very numerous; when they are not distinct; and especially when, upon the fifth day, the fever does not suffer a considerable remission, the disease will still require a great deal of attention.

DCXXII. If, after the eruption, the fever shall continue, the avoiding heat, and the continuing to expose the body to a cool air, will still be proper. If the fever be considerable, with a full and hard pulse, in an adult person, a bleeding will be necessary, and more certainly a cooling purgative. It is however seldom that a repetition of the bleeding will be proper, as a loss of strength does usually come on very soon; but the repetition of a purgative, or the frequent use of laxative glysters, is commonly useful.

DCXXIII. When a loss of strength; with other marks of a putrescent tendency of the fluids, appears, it will be necessary to exhibit the Peruvian bark in substance, and in large quantity. In the same case, the free use of acids and of nitre is useful; and it is commonly proper also to give wine very freely.

DCXXIV. From the fifth day of the disease, onward through the whole course of it, it is proper to give an opiate once or twice a day; taking care, at the same time, to obviate costiveness by purgatives, or laxative glysters.

DCXXV. In a violent disease, from the eighth to the eleventh day, it is proper to lay on blisters successively on different parts of the body, and that without regard to the parts being covered with pustules.

DCXXVI. If, in this disease, the tumor of the fauces be considerable; the deglutition difficult; the saliva and mucus viscid, and with difficulty thrown out, it will be proper to apply blisters to the external fauces, and to employ diligently detergent gargles.

DCXXVII. During the whole course of the disease, when any considerable fever is present, the frequent exhibition of antimonial medicines, in nauseating doses, has been found useful; and these, for the most part, sufficiently answer the purpose of purgatives.

DCXXVIII. The remedies mentioned from DCXXII. to DCXXVI. are those frequently necessary from the fifth day till the suppuration is finished. But as, after that period, the fever is sometimes continued and increased; or, as sometimes, when, after there has been little or no fever before, a fever now arises, and continues with considerable danger; this is what is called the Secondary Fever, and requires particular treatment.

DCXXIX. When the secondary fever follows the distinct small pox, and the pulse is full and hard, the case is to be treated as an inflammatory affection, by bleeding and purging. But if the secondary fever follow the confluent small pox, and be a continuance or exacerbation of the fever which had subsisted before, it is to be considered as of the putrid kind; and in that case bleeding

is improper. Some purging may be necessary ; but the remedies to be chiefly depended on are the Peruvian bark and acids.

When the secondary fever first appears, whether it is after a distinct or a confluent small pox, it will be useful to exhibit an antimonial emetic in nauseating doses, but in such manner as to produce some vomiting.

DCXXX. For avoiding the pits which frequently follow the small pox, many different measures have been proposed ; but none of them appear to be sufficiently certain.

C H A P. II.

OF THE CHICKEN POX*.

DCXXXI. THIS disease seems to depend upon a specific contagion, and to affect persons but once in their lives. It is hardly ever attended with any danger ; but as it seems frequently to have given occasion to the supposition of a person's having the small pox twice, it is proper to study this disease, and to distinguish it from the genuine small pox.

DCXXXII. This may be generally done by attending to the following circumstances :

The eruption of the chicken pox comes on with very little fever preceding it, or with fever of no determined duration.

The pimples of the chicken pox, more quickly than those of the small pox, are formed into little vesicles or pustules.

The matter in these pustules remains fluid, and never acquires the color or consistence of the pus which appears in the pustules of the small pox.

The pustules of the chicken pox are always, in three or four days from their first appearance, formed into crusts.

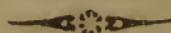
See Dr. Heberden in Med. Transact. Vol. I. art. xvii.

* After a slight fever, pimples, similar to those in small pox, make their appearance : They seldom run on to suppuration ; and in a few days terminate in scales, leaving no pit behind them. *Syn. Noſ.*

OBSERVATIONS

ON THE

COW POX.



I MUST now endeavor to give a succinct account of a discovery, which has of late forcibly arrested the attention of medical men, and of the world at large ; and which promises ultimately to be productive of no inconsiderable advantage to mankind—I mean the introduction of the Cow pox.

Our more enlarged knowledge of the laws which regulate organised matter, suggested the possibility of superseding one disease by substituting a milder in its place : And the application of the cow pox has proved the truth of this opinion. The following are the leading facts relating to it :

Cows are subject to an eruptive disorder, which affects their udder and teats. On these parts, irregular pustules of a bluish or livid color appear ; they are surrounded by an erysipelatous inflammation, contain an acrid watery fluid, and are apt to degenerate into phagedenic ulcers. These affections are for the most part entirely local ; sometimes however the animal is indisposed, and the secretion of milk impaired.

Those employed in milking the cows affected with this complaint, are often attacked with inflamed spots on their hands, and particularly on the joints of their fingers, which assumes the appearance of vesications, of a bluish color, depressed in the middle with an inflamed circular margin. The absorbed matter produces tumors of the axillæ, the constitution becomes affected, and febrile symptoms supervene, accompanied with pains in the head, loins, and limbs, and even now and then a slight delirium.

These symptoms continue from one to four days when they generally abate, leaving ill conditioned ulcerated sores about the hands, which heal with difficulty. This is the course which the *casual* cow pox commonly pursues ; it is never fatal ; and the local affection, though sometimes troublesome, generally yields to proper management. But what renders it so peculiarly interesting, is, its securing the person for ever after from an attack of the small pox.

The origin of this disease is still matter of dispute. Dr. Jenner, to whom we are indebted for calling our attention to this subject, has endeavored to trace its source to that inflammatory swelling in the heel of the horse, called the *Grease*, which generates a very acrid and irritating matter, capable of producing ulceration wherever it is applied. The men servants, in the different dairy counties, who are accustomed to assist in milking, are supposed to infect the cow with this peculiar matter. This is likewise a popular opinion in several of the counties where this disease prevails ; and it has been observed that the grease generally precedes the cow pox. Besides, men who come in contact with the matter which issues from these sores in horses, are occasionally attacked with ulceration, and other symptoms, somewhat resembling those which accompany the cow pox ; and it has been asserted, that this matter, when applied to teats of cows, produces pustules, which infect the human subject with the genuine cow pox. There is still however, a considerable degree of obscurity about this point. Those circumstances, however, which are of most importance, are better ascertained, and require distinct notice.

The first fact, which renders this subject a matter of such interesting inquiry, is, that the cow pox communicated in the natural way, or by inoculation, destroys in those persons who are affected with the local disease and symptomatic fever, all susceptibility of infection from the matter of small pox. This fact is now established upon such unequivocal testimony, from the very extensive and unprejudiced examination which it has undergone, as to convince even the most incredulous. While it guards the constitution against the small pox, it likewise agrees with it in not preventing the local effect which will be produced by the subsequent inoculation of this latter distemper.

The next important consideration, without which the above statement would be perfectly unavailing, is, that the natural cow pox is both greatly milder and safer than the small pox, and that when both are inoculated, the former still maintains a proportioned superiority.

Another decided advantage which the cow pox possesses over the small pox is that the former is not contagious ; it is not propagated by the air, nor communicated in any other way than by actual contact. Hence those who are in the vicinity of the infected person, and who have not previously been affected with the disease, are not exposed to the mischievous consequences of suffering from contagion, which is always to be apprehended in the inoculated small pox.

We have hitherto attended chiefly to the *natural* cow pox, or that which is received from handling the teats of the cow. The *inoculated* cow pox, however, claims primary attention, as it is generally resorted to, from its possessing all the advantages of the former, and from its always rendering the disease milder. It generally exhibits the following symptoms : About the third day after the insertion of the vaccine matter, a small inflamed spot is distinctly observed at the place where the puncture had been made. This continues to spread, hardens, and appears in the form of a circular tumor, somewhat elevated above the level of the skin. A speck is observed, about the sixth day, arising from a small quantity of fluid, which increasing the pustule continues to enlarge till about the tenth day : It is now distinctly circumscribed ; the edges are elevated, and the centre depressed ; in which latter respect it differs from the small pox. About the eighth day, the derangement of the system becomes apparent ; preceded generally by pain at the pustule, and in the axillæ.

The symptoms are lassitude, shiverings, headache and pain in the limbs, accompanied with a quickened pulse. This slight indisposition continues for a day or two, and then abates. During the continuance of these symptoms, the pustule becomes encircled with an erysipelatous inflammation of more than an inch in breadth ; and this points out the affection of the system, which either precedes or accompanies this appearance. The fluid in the pustule now begins to dry up, and a hard brown scab appears upon its surface, which after remaining a week or two, spontaneously falls off, leaving the part beneath perfectly sound. While the fluid is drying up, the color of the inflammation becomes less vivid, and, in a day or two, totally disappears. This is the course which the cow pox pretty uniformly pursues ; the different stages are well marked, and their succession regular.

One of the most important deviations from the usual course of this distemper, is a pustular eruption, which has sometimes been observed in different parts of the body ; it proceeds to maturation, and is capable of communicating the disease, when inserted in the usual manner. These, however, occur rarely, and have been ascribed to different causes. The most probable is, that the persons laboring under the vaccine disease, have been exposed to the contagion of small pox, as it is now ascertained, that during the early stages of this complaint, no security is afforded against that contagion.

The almost uniform mildness of this disease, renders medical assistance in general unnecessary, and its cure is intrusted altogether to regimen. In adults, when the febrile affection rises to any height, a purge of some neutral salt is generally sufficient.

Although the local sore occasions, for the most part, little trouble, it sometimes, though rarely, creates considerable uneasiness, from the extent to which the inflammation runs. In these cases those applications which are useful in restraining inflammation, are indicated. Vinegar and water, or a solution of the acetite of lead, are commonly sufficient for this purpose. Mercurial ointment, or the red precipitate of mercury formed into an ointment, have been powerfully recommended; and the happiest effects have resulted from the affected parts being daily dressed with these applications. Much circumspection is required in employing them; and it is only in rare cases, when the inflammation has run to a great height, after the ninth or tenth day, that they can be resorted to with safety. When applied sooner, there is danger of their checkiing the progress of the disease, before it has produced those salutary effects, which are necessary to secure the constitution against the future invasion of the small pox.

We are by no means from the absence of general indisposition, to conclude that the disease has failed, as most infants have little or no constitutional affection. In ascertaining this most important point, the local affection going regularly through its successive stages, deserves primary consideration. When either the punctured part appears only slightly discolored for a day or two, or becomes highly inflamed, we, with reason, distrust the success of the operation.

It is of considerable moment to attend to the nature of the matter with which the patient is inoculated, as no small inconvenience might arise from a fallacy in this particular. Hence we should be cautious of introducing matter from a spurious cow pox, or from the sore produced by that distemper, after it may have degenerated to a common ulcer. Matter, likewise, which was originally good, by being too long kept, may undergo such alterations as unfit it for this purpose. It is often soon deprived of its activity, and does not appear to be capable of being, in general, near so long preserved as variolous matter.

The most proper time for taking the cow pox matter, is from the sixth day, when the formation of fluid commences, to the tenth, when it begins to dry up. The method of performing the inoculation is thus accurately described by Dr. Woodville: "The lancet should be held

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"nearly at a right angle with the skin, in order that the infectious fluid
"may gravitate to the point of the instrument, which, in this direction,
"should be made to scratch the cuticle repeatedly, until it reach the true
"skin, and becomes tinged with blood."

Those who wish a more detailed information about this interesting subject, may consult the different publications of Dr. Jenner; the work of Dr. Woodville; the communications from Dr. Pearson, and others, inserted in the Medical and Physical Journal; and the concise view of it by Mr. Aitkin.

C H A P. III.

OF THE MEASLES*.

DCXXXIII. THIS disease also depends upon a specific contagion, and affects persons but once in their lives.

DCXXXIV. It occurs most frequently in children ; but no age is exempted from it, if the persons have not been subjected to it before.

DCXXXV. It commonly appears as an epidemic, first in the month of January, and ceases soon after the summer solstice ; but various accidents, introducing the contagion, may produce the disease at other times of the year.

DCXXXVI. The disease always begins with a cold stage, which is soon followed by a hot, with the ordinary symptoms of thirst, heat, anorexia, anxiety, sickness, and vomiting ; and these are more or less considerable in different cases. Sometimes from the beginning the fever is sharp and violent ; often, for the first two days, it is obscure and inconsiderable, but always becomes violent before the eruption, which usually happens upon the fourth day.

DCXXXVII. This eruptive fever, from its commencement, is always attended with hoarseness, with a frequent hoarse dry cough, and frequently with some difficulty of breathing. At the same time, the eye lids are somewhat swelled, the eyes are a little inflamed, and pour out tears ; and, together with these symptoms there is a coryza and frequent sneezing. For the most part, a constant drowsiness attends the beginning of this disease.

* Contagious synocha, with sneezing, watering of the eyes, and dry hoarse cough. On the fourth day, or a little later, small pimples, in clusters, scarcely elevated above the skin, break out, and, in about three days afterwards, terminate in small meally scales. *Syn. Nos.*

DCXXXVIII. The eruption, as we have said, commonly appears upon the fourth day, first on the face, and successively on the lower parts of the body. It discovers itself first in small red points ; but soon after a number of these appear in clusters, which do not arise into visible pimples, but by the touch are found to be a little prominent. This is the case on the face ; but on other parts of the body, the prominence, or roughness, is hardly to be perceived. On the face the eruption retains its redness, or has that increased for two days : but on the third, the vivid redness is changed to a brownish red ; and in a day or two more, the eruption entirely disappears, while a meally desquamation takes place. During the whole time of the eruption, the face is somewhat turgid, but seldom considerably swelled.

DCXXXIX. Sometimes, after the eruption has appeared, the fever ceases entirely : but this is seldom the case ; and more commonly the fever continues, or is increased after the eruption, and does not cease till after the desquamation. Even then the fever does not always cease, but continues with various duration and effect.

DCXL. Though the fever happen to cease upon the eruption's taking place, it is common for the cough to continue till after the desquamation, and sometimes much longer.

In all cases, while the fever continues, the cough also continues, generally with an increase of the difficulty of breathing ; and both of these symptoms sometimes arise to a degree that denotes a pneumonic affection. This may arise at any period of the disease ; but very often it does not come on till after the desquamation of the eruption.

After the same period also, a diarrhoea frequently comes on, and continues for some time.

DCXLI. It is common for the measles, even when they have not been of a violent kind, to be succeeded by inflammatory affections, particularly ophthalmia and phthisis.

DCXLII. If the blood be drawn from a vein during the measles, with the circumstances necessary to favor

the separation of the gluten, this always appears separated, and lying on the surface of the crassamentum, as in inflammatory diseases.

DCXLIII. For the most part, the measles, even when violent, are without any putrid tendency ; but in some cases such a tendency appears, both in the course of the disease, and especially after the ordinary course of it is finished. See Dr. Watson, in London Med. Observations, Vol. IV. art. xi.

DCXLIV. From what is delivered (from DCXXXVII. to DCXLII.) it will appear, that the measles are distinguished by a catarrhal affection, and by an inflammatory diathesis to a considerable degree ; and therefore the danger attending them arises chiefly from the coming on of a pneumonic inflammation.

DCXLV. From this consideration it will be obvious, that the remedies especially necessary, are those which may obviate and diminish the inflammatory diathesis ; and therefore, in a particular manner, blood letting. This remedy may be employed at any time in the course of the disease, or after its ordinary course is finished. It is to be employed more or less according to the urgency of the symptoms of fever, cough, and dyspnoea ; and generally may be employed very freely. But as the symptoms of pneumonic inflammation seldom come on during the eruptive fever ; and as this fever is sometimes violent immediately before the eruption, though a sufficiently mild disease be to follow ; so bleeding is seldom very necessary during the eruptive fever, and may often be reserved for the periods of greater danger which are perhaps to ensue.

DCXLVI. In all cases of measles, where there are no marks of putrefaction, and where there is no reason, from the known nature of the epidemic to apprehend putrefaction, bleeding is the remedy to be depended upon : but assistance may also be obtained from cooling purgatives ; and particularly from blistering on the sides, or between the shoulders.

DCXLVII. The dry cough may be alleviated by the large use of demulcent pectorals, mucilaginous, oily, or

sweet. It may however be observed, with respect to these demulcents, that they are not so powerful in involving and correcting the acrimony of the mass of blood as has been imagined ; and that their chief operation is by besmearing the fauces, and thereby defending them from the irritation of acrids, either arising from the lungs, or distilling from the head.

DEXLVIII. For moderating and quieting the cough in this disease, opiates certainly prove the most effectual means, whenever they can be safely employed. In the measles, in which an inflammatory state prevails in a considerable degree, opiates may be supposed to be inadmissible ; and in those cases in which a high degree of pyrexia and dyspnœa show either the presence, or at least the danger of pneumonic inflammation, I think that opiates might be very hurtful. In cases however, in which the dyspnœa is not considerable, and where bleeding, to obviate or abate the inflammatory state, has been duly employed, and where the cough and watchfulness are the urgent symptoms, I think that opiates may be safely exhibited, and with great advantage. I think, further, that in all the exanthemata, there is an acrimony diffused over the system, which gives a considerable irritation ; and for obviating the effects of this, opiates are useful, and always proper, when no particular contra indication prevails.

DEXLIX. When the desquamation of the measles is finished, though there should then be no disorder remaining, physicians have thought it necessary to purge the patient several times, with a view to draw off the dregs of this disease, that is, a portion of the morbific matter which is supposed to remain long in the body. I cannot reject this supposition ; but at the same time cannot believe, that the remains of the morbific matter, diffused over the whole mass of blood, can be entirely drawn off by purging ; and it appears to me, that, to avoid the consequences of the measles, it is not the drawing off the morbific matter, which we need to study, so much as the obviating and removing the inflammatory state of the system which had been induced

by the disease. With this last view, indeed, purging may still be a proper remedy; but bleeding, in proportion to the symptoms of inflammatory disposition, is yet more so.

DCL. From our late experience of the benefit of cold air in the eruptive fever of the small pox, some physicians have been of opinion that the practice might be transferred to the measles; but we have not yet had trials sufficient to ascertain this. There is no doubt that external heat may be very hurtful in the measles, as in most other inflammatory diseases; and therefore the body ought to be kept in a moderate temperature during the whole course of the measles; but how far, at any period of the disease, cold air may be applied with safety, we are yet uncertain. Analogy, though so often the resource of physicians, is in general fallacious; and further, though the analogy with the small pox might lead to the application of cold air during the eruptive fever of the measles, the analogy with catarrh seems to be against the practice. After the eruption had appeared upon the skin, we have had many instances of cold air making it disappear, and thereby producing much disorder in the system; and have also had frequent examples of such disorder being removed by restoring the heat of the body, and thereby again bringing forth the eruption.

C H A P. IV.

OF THE SCARLET FEVER*.

DCLI. It may be doubted if the scarlet fever be a disease specifically different from the cynanche maligna above described. The latter is almost always attended with a scarlet eruption; and in all the instances

* *Contagious synocha.* On the fourth day of the disease, the face becomes somewhat swelled; at the same time, a florid redness is observed on the skin, with large spots, at length uniting, and terminating, after the third day, in mealy desquamations. An anaerca often supervenes. *Syn. Nos.*

I have seen of what may be called the scarlet fever, the disease, in almost every person affected, has been attended with an ulcerous sore throat.

DCLII. This view of the matter may create some doubt ; but I am still of opinion, that there is a scarlet fever which is a disease specifically different from the cynanche maligna.

Dr. Sydenham has described a scarlet fever, which he had seen prevailing as an epidemic, with all the circumstances of the fever and eruption, without its being accompanied with any affection of the throat ; at least he does not take notice of any such affection, which such an accurate observer could not fail to have done, if any such symptom, as we have commonly seen making a principal part of the disease, had attended those cases which he had observed. Several other writers have described the scarlet fever in the same manner, and I know physicians who have seen the disease in that form ; so that there can be no doubt of there being a scarlet fever not necessarily connected with an ulcerous sore throat, and therefore a disease different from the cynanche maligna.

DCLIII. But, further, although in all the instances of scarlet fever which I have seen (and in the course of forty years I have seen it six or seven times prevailing as an epidemic in Scotland), the disease, in almost all the persons affected, was attended with an ulcerous sore throat, or was what Sauvages names the Scarlatina Anginosa ; and although, in some instances, the ulcers of the throat were of a putrid and gangrenous kind, and at the same time the disease in all its symptoms resembled very exactly the cynanche maligna ; yet, I am still persuaded, that not only the scarlatina of Sydenham, but that even the scarlatina anginosa of Sauvages, is a different disease from the cynanche maligna ; and I have formed this opinion from the following considerations :

DCLIV. 1st, There is a scarlet fever entirely free from any affection of the throat, which sometimes prevails as an epidemic ; and therefore there is a specific contagion

producing a scarlet eruption without any determination to the throat.

2dly, The Scarlatina, which, from its matter being generally determined to the throat, may be properly termed Anginosa, has, in many cases of the same epidemic, been without any affection of the throat ; and therefore the contagion may be supposed to be more especially determined to produce the eruption only.

3dly. Though in all the epidemics that I could allege to be those of the scarlatina anginosa, there have been some cases which, in the nature of the ulcers, and in other circumstances, exactly resembled the cases of the cynanche maligna, yet I have as constantly remarked, that these cases have not been above one or two in a hundred, while the rest have all of them been with ulcers of a benign kind, and with circumstances hereafter to be described, somewhat different from those of the cynanche maligna.

4thly, On the other hand, as I have two or three times seen the cynanche maligna epidemically prevailing ; so, among the persons affected, I have seen instances of cases as mild as those of the scarlatina anginosa usually are : but here the proportion was reversed ; and these mild cases were not one fifth of the whole, while the rest were of the putrid and malignant kind.

Lastly, It applies to the same purpose to observe, that of the cynanche maligna, most of the instances terminate fatally ; while, on the other hand, that is the event of very few of the cases of the scarlatina anginosa.

DCLV. From these considerations, though it may appear that there is some affinity between the cynanche maligna and scarlatina anginosa, it will still remain probable that the two diseases are specifically different*. I

* The arguments which our author has adduced in support of this specific difference, appear rather inconclusive. They only show, that the disease is sometimes more mild than at others, which by no means justifies such a distinction. We might, with equal propriety, infer, that the confluent small pox, from the greater severity of its symptoms, should be referred to a different class of diseases from the distinct form of that distemper. Besides, Doctor Gregory has observed in the same family, the different forms of this disease arise from the same contagion. It has been urged, that the scarlatina anginosa attacks people only once in their life, while they may fre-

have been at some pains to establish this opinion : for, from all my experience, I find that those two diseases require a different treatment ; and I therefore now proceed to mention more particularly the circumstances of the scarlatina anginosa.

DCLVI. This disease commonly appears about the beginning of winter, and continues throughout that season. It comes on with some cold shivering, and other symptoms of the fever which usually introduces the other exanthemata. But here there is no cough, nor the other catarrhal symptoms which attend the measles ; nor is there that anxiety and vomiting which commonly introduce the confluent small pox, and which more certainly introduce the Cynanche Maligna.

Early in the disease, some uneasiness is felt in the throat ; and frequently the deglutition is difficult, generally more so than in the Cynanche Maligna. Upon looking into the fauces, a redness and swelling appear, in color and bulk approaching to the state of these symptoms in the Cynanche Tonsillaris ; but in the Scarlatina, there is always more or less of sloughs, which seldom appear in the Cynanche Tonsillaris ; and the sloughs are commonly whiter than those in the Cynanche maligna.

While these appearances are discovered in the fauces, upon the third or fourth day a scarlet eruption appears on the skin, in the same form as described in cccxiv. This eruption is commonly more considerable and universal than in the Cynanche ; but it seldom produces a remission of the fever. The eruption for the most part remains till the third or fourth day after its first appearance ; but then goes off, ending in a meally desquamation. At this time the fever usually subsides ; and generally at the same time some degree of sweat comes on.

quently labor under the cynanche maligna, and even appear to acquire a predisposition to it, in consequence of a previous attack. Doctor Withering, who formerly insisted much on this circumstance, has candidly retracted his opinion, observing, that he was misled, from taking the *speckled* sore throat (which is not to occur in those who have been afflicted with the ulcerated sore throat) for this latter complaint ; but it differs from it in almost every essential circumstance ; it is not infectious nor dangerous, nor has it any thing in common with cynanche maligna, but the sloughs in the throat.

The sloughs on the fauces, which appeared early in the disease, continue for some days; but then falling off, discover the swelling abated, and an ulcer formed on one or both tonsils showing a laudable pus; and soon after the fever has subsided, these ulcers heal up entirely. For the most part this disease has much less of coryza attending it than the Cynanche Maligna; and when there is a coryza attending the Scarlatina, the matter discharged is less acrid, and has not the fetid smell which it has in the other disease.

In the Scarlatina, when the eruption has entirely disappeared, it frequently happens, that in a few days after, the whole body is affected with an anasarcaous swelling; which however in a few days more, gradually subsides.

We have thus described the most common circumstances of the Scarlatina Anginosa; and have only to add, that during the time of its being epidemic, and especially upon its first setting in, there are always a few cases in which the circumstances of the disease approach very nearly to those of the Cynanche Maligna; and it is only in these instances that the disease is attended with any danger.

DCLVII. With respect to the cure of this disease, when the symptoms of it are nearly the same with those of the Cynanche Maligna, it requires exactly the same treatment as directed in CCCXVII.

DCLVIII. When the scarlet fever appears, without any affection of the throat, the treatment of it is very simple, and is delivered by Dr. Sydenham. An antiphlogistic regimen is commonly all that is requisite; avoiding, on one hand, the application of cold air; and, on the other, any increase of external heat *.

* We understand that Dr. Currie has been equally successful in his application of the cold affusion in this disease. He conceives, that the heat in this affection often rises to a greater height than in any other febrile distemper. In fifty two cases in which he tried this remedy, its beneficial effects were extremely conspicuous: Only two patients fell victims to the disease, and these were in such desperate circumstances, as precluded all hopes of relief.

DCLIX. In the ordinary state of the Scarlatina Anginosa, the same treatment is in most cases sufficient; but as here the fever is commonly more considerable, and there is likewise an affection of the throat, some remedies may be often necessary.

DCLX. When there is a pretty high degree of fever with a full pulse, and a considerable swelling of the tonsils, bleeding is very proper, especially in adults; and it has been frequently practised with advantage: but as, even in the Cynanche Tonsillaris much bleeding is seldom necessary (cccv.); so in the Scarlatina, when the state of the fever and the appearances of the fauces render the nature of the disease ambiguous, bleeding may be omitted; and, if not altogether avoided, it should at least not be large, and ought not to be repeated.

DCLXI. Vomiting and especially nauseating doses of emetics, notwithstanding the inflamed state of the fauces, have been found very useful in this disease. An open belly is proper in every form of this disease; and when the nauseating doses of emetics operate a little downwards, they are more serviceable.

DCLXII. In every form of the Scarlatina Anginosa, through the whole course of it, detergent gargles should be employed, and more or less as the quantity of sloughs and the viscid mucus in the fauces may seem to require.

DCLXIII. Even in the milder states of the Scarlatina Anginosa, it has been common with practitioners to exhibit the Peruvian bark through the whole course of the disease; but we are assured, by much experience, that in such cases it may be safely omitted, though in cases any ways ambiguous, it may not be prudent to neglect this remedy.

DCLXIV. The anasarcaous swelling, which frequently follows the Scarlatina Anginosa, seldom requires any remedy; and, at least, the purgatives so much inculcated, and so commonly exhibited, soon take off, the anasarca.

C H A P. V.

OF THE PLAGUE*.

SECT. I. *Of the Phenomena of the Plague.*

DCLXV. THE Plague is a disease which always arises from contagion ; which affects many persons about the same time ; proves fatal to great numbers ; generally produces fever ; and in most persons, is attended with buboes or carbuncles.

DCLXVI. These are the circumstances, which, taken together, give the character of the disease ; but it is accompanied with many symptoms almost peculiar to itself, that in different persons are greatly diversified in number and degree, and should be particularly studied. I would wish to lay a foundation for this ; but think it unfit for a person who has never seen the disease to attempt its particular history. For this, therefore, I must refer to the authors who have written on the subject ; but allowing those only to be consulted, who have themselves seen and treated the disease in all its different forms.

DCLXVII. From the accounts of such authors, it appears to me, that the circumstances which particularly distinguish this disease, and especially the more violent and dangerous states of it, are,

1st, The great loss of strength in the animal functions, which often appears early in the disease.

2dly, The stupor, giddiness, and consequent staggering, which resembles drunkenness, or the headach, and various delirium ; which are all of them symptoms denoting a great disorder in the functions of the brain.

3dly, The anxiety, palpitation, syncope, and especially the weakness and irregularity of the pulse, which denote a considerable disturbance in the action of the heart.

4thly, The nausea and vomiting, particularly the vomiting of bile, which shows an accumulation of vitiated bile in the gall bladder and biliary ducts, and from thence

* Typhus, extremely contagious; great prostration of strength. On an uncertain day of the disease, buboes break out. *Syn. Nos.*

derived into the intestines and stomach; all of which symptoms I suppose to denote a considerable spasm, and loss of tone in the extreme vessels on the surface of the body.

5thly, The buboes or carbuncles, which denote an acrimony prevailing in the fluids. And,

Lastly, The petechiae, hemorrhagies, and colliquative diarrhoea, which denote a putrescent tendency prevailing to a great degree in the mass of blood.

DCLXVIII. From the consideration of all these symptoms, it appears, that the plague is especially distinguished by a specific contagion, often suddenly producing the most considerable symptoms of debility in the nervous system or moving powers, as well as of a general putrefaction in the fluids; and it is from the consideration of these circumstances as the proximate cause, that I think both the prevention and cure of the plague must be directed.

DCLXIX. If this disease shculd revisit the northern parts of Europe, it is probable, that, at the time, there will be no physician then alive, who, at the first appearance of the disease, can be guided by his former experience, but must be instructed by his study of the writers on this subject, and by analogy. It is, therefore, I hope, allowable for me, upon the same grounds, to offer here my opinion with respect to both the prevention and cure of this disease.

This paragraph was written before I had any notice of the plague of Moscow, anno 1771; but I think it will still apply to the case of Great Britain, and of many other northern states.

SECT. II. *Of the Prevention of the Plague.*

DCLXX. With respect to the prevention: As we are firmly persuaded that the disease never arises in the northern parts of Europe, but in consequence of its being imported from some other country; so the first measure necessary, is the magistrate's taking care to prevent the importation; and this may generally be

done, by a due attention to bills of health, and to the proper performance of quarantains.

DCLXXI. With respect to the latter, we are persuaded, that the quarantain of persons may safely be much less than forty days ; and, if this were allowed, the execution of the quarantain would be more exact and certain, as the temptation to break it would be in a great measure removed.

DCLXXII. With respect to the quarantain of goods, it cannot be perfect, unless the suspected goods be unpacked and duly ventilated, as well as the other means employed for correcting the infection they may carry ; and, if all this were properly done, it is probable, that the time commonly prescribed for the quarantain of goods might also be shortened.

DCLXXIII. A second measure, in the way of prevention, becomes requisite, when an infection has reached and prevailed in any place, to prevent that infection from spreading into other places. This can be done only by preventing the inhabitants, or the goods of any infected place, from going out of it, till they have undergone a proper quarantain.

DCLXXIV. The third measure for prevention, to be employed with great care, is to hinder the infection from spreading among the inhabitants of the place in which it has arisen. The measures necessary for this, are to be directed by the doctrine laid down in LXXXII ; and, from that doctrine, we infer, that all persons who can avoid any near communication with infected persons, or goods, may escape the infection.

DCLXXV. For avoiding such communication, a great deal may be done by the magistrate ; 1. By allowing as many of the inhabitants as are free from the infection, and not necessary to the service of the place, to go out of it : 2. By prohibiting all assemblies, or unnecessary intercourse of the people : 3. By taking care that necessary communications be performed without contact : 4. By making such arrangements and provisions as may render it easy for the families remaining, to shut themselves up in their own houses : 5. By allow-

ing persons to quit houses in which an infection appears, upon condition that they go into lazarettos : 6. By ventilating and purifying, or destroying, at the public expence, all infected goods : Lastly, By avoiding hospitals, and providing separate apartments for infected persons.

The execution of these measures will require great authority, and much vigilance and attention, on the part of the magistrate ; but it is not our province to enter into any detail on this subject of the public police.

DCLXXVI. The fourth and last part of the busines of prevention, respects the conduct of persons necessarily remaining in infected places, especially of those obliged to have some communication with persons infected.

DCLXXVII. Of those obliged to remain in infected places, but not obliged to have any near communication with the sick, they may be preserved from the contagion, by avoiding all near communication with other persons, or their goods ; and it is probable, that a small distance will answer the purpose, if, at the same time, there be no stream of air to carry the effluvia of persons, or goods, to some distance.

DCLXXVIII. For those who are necessarily obliged to have a near communication with the sick, it is proper to let them know, that some of the most powerful contagions do not operate, but when the bodies of men exposed to the contagion are in certain circumstances which render them more liable to be affected by it, or when certain causes concur to excite the power of it ; and, therefore, by avoiding these circumstances and causes, they may often escape infection.

DCLXXIX. The bodies of men are especially liable to be effected by contagions, when they are any ways considerably weakened by want of food, and even by a scanty diet, or one of little nourishment ; by intemperance in drinking, which, when the stupor of intoxication is over, leaves the body in a weakened state ; by excess in venery ; by great fatigue ; or by any considerable evacuation.

DCLXXX. The causes which, concurring with contagion, render it more certainly active, are cold, fear, and full living.

The several means, therefore, of avoiding or guarding against the action of cold (xciv. to xcvi.) are to be carefully studied.

DCLXXXI. Against fear the mind is to be fortified as well as possible, by inspiring a favorable idea of the power of preservative means; by destroying the opinion of the incurable nature of the disease; by occupying mens minds with business or labor; and, by avoiding all objects of fear, as funerals, passing bells, and any notice of the death of particular friends.

DCLXXXII. A full diet of animal food increases the irritability of the body, and favors the operation of contagion; and indigestion, whether from the quantity or quality of food, has the same effect.

DCLXXXIII. Besides giving attention to obviate the several circumstances (Dcx. DCLXXIX. to DCLXXXII.) which favor the operation of contagion, it is probable, that some means may be employed for strengthening the bodies of men, and thereby enabling them to resist contagion.

For this purpose, it is probable, that the moderate use of wine, or of spiritous liquors, may have a good effect.

It is probable also, that exercise, when it can be employed, if so moderate as to be neither heating nor fatiguing to the body, may be employed with advantage.

Persons who have tried cold bathing, and commonly feel invigorating effects from it, if they are any ways secure against having already received infection, may possibly be enabled to resist it by the use of the cold bath.

It is probable, that some medicines also may be useful in enabling men to resist infection; but amongst these I can hardly admit the numerous alexipharmics formerly proposed, or, at least, very few of them, and those only of tonic power. Amongst these last we reckon the Peruvian bark; and it is perhaps the most effectual. If any thing is to be expected from antisept-

tics, I think camphire, whether internally or externally employed, is one of the most promising.

Every person is to be indulged in the use of any means of preservation of which he has conceived a good opinion, whether it be a charm or a medicine, if the latter be not directly hurtful.

Whether issues be useful in preserving from, or in moderating the effects of contagion, I cannot determine from the observations I have yet read.

DCLXXXIV. As neither the atmosphere in general, nor any considerable portion of it, is tainted or impregnated with the matter of contagions; so the lightning of fires over a great part of the infected city, or other general fumigations in the open air, are of no use for preventing the disease, and may perhaps be hurtful.

DCLXXXV. It would probably contribute much to check the progress of infection, if the poor were enjoined to make a frequent change of clothing, and were suitably provided for that purpose, and if they were, at the same time, induced to make a frequent ventilation of their houses and furniture.

SECT. III. *Of the Cure of the Plague.*

DCLXXXVI. In the cure of the plague, the indications are the same as those of fever in general (cxxvi.); but here they are not all equally necessary and important.

DCLXXXVII. The measures for moderating the violence of reaction, which operate by diminishing the action of the heart and arteries (dcxxviii.), have seldom any place here, excepting so far as the antiphlogistic regimen is generally proper. Some physicians, indeed, have recommended bleeding; and there may occur cases in which bleeding may be useful; but, for the most part, it is unnecessary, and, in many cases, it might be very hurtful.

Purging has also been recommended, and, in some degree, it may be useful, in drawing off the bile, or other putrescent matters frequently present in the intestines; but a large evacuation this way may certainly be hurtful.

DCLXXXVIII. The moderating the violence of reaction, so far as it can be done by taking off the spasm of the extreme vessels (cli.) is a measure of the utmost necessity in the cure of the plague; and the whole of the means (cli. to cc.) suited to this indication, are extremely proper.

DCLXXXIX. The giving an emetic, at the very first approach of the disease, would probably be of great service; and it is likely, that at some other periods of the disease, emetics might be useful, both by evacuating bile abundant in the alimentary canal, and by taking off the spasm of the extreme vessels.

DCXC. From some principles with respect to fever in general, and with respect to the plague in particular, I am of opinion, that, after the exhibition of the first vomit, the body should be disposed to sweat, which ought to be raised to a moderate degree only, but continued for at least twenty-four hours, or longer, if the patient bear it easily.

DCXCI. This sweating* should be excited and conduct-

* The following mode of promoting sweat, it is said, has been attended with singular success. It was first suggested by Mr. Baldwin, the British agent at Alexandria, and has spread through Europe. "Immediately after a person is perceived to be infected with the plague, he must be taken into a close room, and, over a brazier of hot coals, with a clean sponge dipped in warm olive oil, his body must be very briskly rubbed all over, for the purpose of producing a profuse sweat. During the friction, sugar and juniper berries must be burnt in the fire, which raise a dense and hot smoke, that contributes to the effect. The friction ought not to be continued more than four minutes, and a pint of oil is enough to be used at each time. In general, the first rubbing is followed by a very copious perspiration; but, should it fail of this effect, the operation may be repeated, first wiping the body with a warm dry cloth; and, in order still farther to promote perspiration, the patient may take any warm sudorific drink, such as elder flower tea, &c. It is not necessary to touch the eyes; and other tender parts of the body may be rubbed more gently. Every possible precaution must be made use of to prevent the patient taking cold; such as keeping covered those parts of the body not directly under the operation; nor must the linen be changed till the perspiration has entirely subsided. The operation should be repeated once a day, until evident symptoms of recovery begin to appear. If there are already tumors on the body, they should be gently and more frequently rubbed, till they appear to be in a state of suppuration, when they may be dressed with the usual plasters. The operation ought to be begun on the first appearance of the symptoms of disease; if neglected till the nerves, and the mass of blood are affected, or a diarrhoea has commenced, little hopes can be entertained of a cure; but still the patient should not be despaired of, as by an assiduous application of the means proposed, some few have recover-

ed agreeably to the rules laid down in CLXVIII. It is to be promoted by the plentiful use of diluents, rendered more grateful by vegetable acids, or more powerful by being impregnated with some portion of neutral salts.

DCXCII. To support the patient under the continuance of the sweat, a little weak broth, acidulated with juice of lemons, may be given frequently, and sometimes a little wine, if the heat of the body be not considerable.

DCXCIII. If sudorific medicines are judged to be necessary, opiates are the most effectual and safe: But they should not be combined with aromatics; and probably may be more effectual, if joined with a portion of emetics, and of neutral salts.

DCXCIV. If, notwithstanding the use of emetics and sudorifics, the disease should still continue, the cure must depend upon the employment of means for obviating debility and putrefcency; and for this purpose, the various remedies proposed above (from ccI. to ccxxvii.) may all be administered, but especially the tonics; and of these the chief are cold drink and the Peruvian bark.

DCXCV. In the cure of the plague, some attention is due to the management of buboes and carbuncles; but we do not touch this, as it belongs to the province of surgery.

" ed even after diarrhoea had commerced. During the first four or five days, the patient must observe a very abstemious diet; the author allows only a small quantity of vermicilli, simply boiled in water. Nor must any thing be taken for the space of thirty or forty days, except very light food as he says, an indigestion, in any stage of the disorder, might be extremely dangerous. He does not allow the use of wine till the expiration of forty days.

" There is no instance of the person rubbing a patient having taken the infection. He should previously anoint himself over with oil, and must avoid receiving the breath of the infected person into his mouth and nostril's. The prevention to be used, in all circumstances, is, that of carefully anointing the body, and living upon light and easily digestible food."

C H A P. VI.

OF ERYSIPELAS*, OR ST. ANTHONY'S FIRE.

DCXCVI. IN CCLXXIV. I mentioned the distinction which I proposed to make between the diseases to be named the Erythema and the Erysipelas ; and from thence it will appear, that Erysipelas, as an Erythema following fever, may have its place here.

DCXCVII. I suppose the erysipelas to depend on a matter generated within the body, and which, analogous to the other cases of exanthemata, is, in consequence of fever, thrown out upon the surface of the body. I own it may be difficult to apply this to every particular case of erysipelas ; but I take the case in which it is generally supposed to apply, that of the erysipelas of the face ; which I shall therefore consider here.

DCXCVIII. The Erysipelas of the face comes on with a cold shivering, and other symptoms of pyrexia. The hot stage of this is frequently attended with a confusion of head, and some degree of delirium ; and almost always with drowsiness, or perhaps coma. The pulse is always frequent, and commonly full and hard.

DCXCIX. When these symptoms have continued for one, two, or at most three days, there appears on some part of the face, a redness, such as that described in CCLXXV. as the appearance of Erythema. This redness, at first, is of no great extent ; but gradually spreads from the part it first occupied to the other parts of the face, commonly till it has affected the whole ; and frequently from the face it spreads over the hairy scalp, or

* Synocha, of two or three days, attended with drowsiness, and, not unfrequently, delirium. On some part of the skin, oftenest on the face, an erythematous swelling appears.

Species 1. Erysipelas (*vesciculatum*) attended with erythema ; a spreading redness, occupying a large space, and running into large blisters in several places.

Species 2. Erysipelas (*phlyctenodes*), attended with an erythema, accompanied with several pimples occupying the trunk of the body, and running into small blisters. *Syn. Nef.*

descends on some part of the neck. As the redness spreads, it commonly disappears, or at least decreases in the parts it had before occupied. All the parts upon which the redness appears, are at the same time affected with some swelling, which continues for some time after the redness has abated. The whole face becomes considerably turgid ; and the eye lids are often so much swelled, as entirely to shut up the eyes.

DCC. When the redness and swelling have proceeded for some time, there commonly arise, sooner or later, blisters of a larger or smaller size, on several parts of the face. These contain a thin yellowish, or almost colorless liquor, which sooner or later runs out. The surface of the skin, in the blistered places, sometimes becomes lived and blackish ; but this livor seldom goes deeper than the surface, or discovers any degree of gangrene affecting the skin. On the parts of the face not affected with blisters, the cuticle suffers, towards the end of the disease, a considerable desquamation.

Sometimes the tumor of the eye lids ends in a suppuration.

DCCI. The inflammation coming upon the face does not produce any remission of the fever which had before prevailed ; and sometimes the fever increases with the increasing and spreading inflammation.

DCCII. The inflammation usually continues for eight or ten days ; and, for the same time, the fever and symptoms attending it also continue.

DCCIII. In the progress of the inflammation the delirium and coma attending it sometimes go on increasing, and the patient dies apoplectic on the seventh, ninth, or eleventh day of the disease. In such cases, it has been commonly supposed that the disease is translated from the external to the internal parts. But I have not seen any instance in which it did not appear to me, that the affection of the brain was merely a communication of the external affection, as this continued increasing at the same time with the internal.

DCCIV. When the fatal event does not take place, the inflammation, after having affected a part, commonly

the whole of the face, and perhaps the other external parts of the head, ceases. With the inflammation, the fever also ceases ; and, without any evident crisis, the patient returns to his ordinary state of health.

DCCV. This disease is not commonly contagious ; but as it may arise from an acrid matter externally applied, so it is possible that the disease may sometimes be communicated from one person to another.

Persons who have once labored under this disease are liable to returns of it.

DCCVI. The event of this disease may be foreseen from the state of the symptoms which denote more or less affection of the brain. If neither delirium nor coma come on, the disease is seldom attended with any danger ; but when these symptoms appear early in the disease, and are in a considerable degree, the utmost danger is to be apprehended.

DCCVII. As this disease often arises in the part, at the same time with the coming on of the pyrexia ; as I have known it, with all its symptoms, arise from an acrimony applied to the part ; as it is commonly attended with a full, and frequently a hard pulse ; as the blood drawn in this disease shows the same crust upon its surface that appears in the Phlegmasiae ; and lastly, as the swelling of the eye lids, in this disease, frequently ends in a suppuration ; so, from these considerations it seems doubtful, if this disease be properly, in Nosology, separated from the Phlegmasiae. At any rate, I take the disease I have described to be what physicians have named the Erysipelas Phlegmonodes, and that it partakes a great deal of the nature of the Phlegmasiae.

DCCVIII. Upon this conclusion, the Erysipelas of the face is to be cured very much in the same manner as phlegmonic inflammations, by bloodletting, cooling purgatives, and by employing every part of the antiphlogistic regimen ; and our experience has confirmed the fitness of this method of cure.

DCCIX. The evacuations of blood letting and purging, are to be employed more or less according to the urgency of symptoms, particularly those of the pyrexia,

and of those which mark an affection of the brain. As the pyrexia continues, and often increases with the inflammation of the face; so the evacuations mentioned may be employed at any time in the course of the disease.

DCCX. In this, as in other diseases of the head, it is proper to put the patient, as often as he can easily bear it, into somewhat of an erect posture.

DCCXI. As in this disease there is always an external affection, and as in many instances there is no other; so various external applications to the part affected have been proposed; but almost all of them are of doubtful effect. The narcotic, refrigerant, and astringent applications, are suspected of disposing to gangrene; spirituous applications seem to increase the inflammation; and all oily or watery applications seem to occasion its spreading. The application that seems most safe; and which is now most commonly employed, is that of a dry mealy powder frequently sprinkled upon the inflamed parts.

DCCXII. An Erysipelas Phlegmonoides frequently appears on other parts of the body, beside the face; and such other erysipelatous inflammations frequently end in suppuration. These cases are seldom dangerous. At coming on, they are sometimes attended with drowsiness, and even with some delirium; but this rarely happens; and these symptoms do not continue after the inflammation is formed. I have never seen an instance of the translation of this inflammation from the limbs to an internal part; and though these inflammations of the limbs be attended with pyrexia, they seldom require the same evacuations as the erysipelas of the face. At first they are to be treated by dry mealy applications only; and all humid applications, as fomentations, or poultices, are not to be applied, till, by the continuance of the disease, by the increase of swelling, or by a throbbing felt in the part, it appears that the disease is proceeding to suppuration.

DCCXIII. We have hitherto considered erysipelas as in a great measure of a phlegmonic nature; and, agreeably to that opinion, we have proposed our method of cure.

But it is probable, that an erysipelas is sometimes attended with, or is a symptom of a putrid fever; and in such cases, the evacuations proposed above may be improper, and the use of the Peruvian bark may be necessary; but I cannot be explicit upon this subject, as such putrid cases have not come under my observation.

C H A P. VII.

OF THE MILIARY FEVER*.

DCCXIV. THIS disease is said to have been unknown to the ancients, and that it appeared, for the first time in Saxony, about the middle of the last century. It is said to have spread from thence into all the other parts of Europe; and since the period mentioned, to have appeared in many countries in which it had never appeared before.

DCCXV. From the time of its having been first particularly observed, it has been described and treated of by many different writers, and, by all of them, till very lately, has been considered as a peculiar idiopathic disease.

It is said to have been constantly attended with peculiar symptoms. It comes on with a cold stage, which is often considerable. The hot stage, which succeeds, is attended with great anxiety, and frequent sighing. The heat of the body becomes great, and soon produces profuse sweating, preceded, however, by a sense of prickling, as of pin points, in the skin; and the sweat is of a peculiarly rank and disagreeable odor. The eruption appears sooner or later in different persons, but at no determined period of the disease. It seldom or never ap-

* Svochus, with anxiety; frequent sighing, an oily sweat, and a prickling sensation of the skin. On an uncertain day of the disease, small, red, distinct pimplies appear on the whole skin, except the face, whose *apices*, in the course of one or two days, show small white pustules of short duration.
Syn. Nos.

pears on the face ; but discovers itself first upon the neck and breast, and from thence often spreads over the whole body.

DCCXVI. The eruption named Miliary, is said to be of two kinds ; the one named the Red, the other the White Miliary. The former, which in English is strictly named a Rash, is commonly allowed to be a symptomatic affection ; and as the latter is the only one that has any pretensions to be considered as an idiopathic disease, it is this alone that I shall more particularly describe and treat of in the present chapter.

DCCXVII. What then is called the White Miliary eruption, appears at first like the red, in very small red pimples, for the most part distinct, but sometimes clustered together. Their slight prominence is distinguished better by the finger than by the eye. Soon after the appearance of this eruption, and at least on the second day, a small vesicle appears upon the top of each pimple. At first the vesicle is whey colored, but soon becomes white, and stands out like a little globule on the top of the pimple. In two or three days, these globules break, or are rubbed off, and are succeeded by small crusts, which soon after fall off in small scales. While one set of pimples takes this course, another set succeeds ; so that the disease often continues upon the skin for many days together. Sometimes, when one crop of this eruption has disappeared, another, after some interval, is produced. And it has been further observed, that, in some persons, there is such a tendency to this disease, that they have been affected with it several times in the course of their lives.

DCCXVIII. This disease is said to affect both sexes, and persons of all ages and constitutions ; but it has been observed, at all times, to affect especially, and most frequently, lying in women.

DCCXIX. This disease is often accompanied with violent symptoms, and has frequently proved fatal. The symptoms attending it are however, very various. They are, in one or other instance, all the several symptoms attending febrile diseases ; but I cannot find that any

symptom, or concourse of symptoms, are steadily the same in different persons, so as to furnish any specific character to the disease. When the disease is violent, the most common symptoms are phrenitic, comatose, and convulsive affections, which are also symptoms of all fevers treated by a very warm regimen.

DCCXX. While there is such a variety of symptoms appearing in this disease, it is not to be expected that any one particular method of cure can be proposed; and accordingly, we find, in different writers, different methods and remedies prescribed; frequent disputes about the most proper; and those received and practised by some, opposed and rejected by others.

DCCXXI. I have thus given an account of what I have found delivered by authors who have considered the white miliary fever as an idiopathic disease; but now, after having often observed the disease, I must say, that I doubt much if it ever be such an idiopathic as has been supposed, and I suspect that there is much fallacy in what has been written on the subject.

DCCXXII. It seems to me very improbable, that this should have been really a new disease, when it was first considered as such. There appear to me very clear traces of it in authors who wrote long before that period; and, though there were not, we know that the descriptions of the ancients were inaccurate and imperfect, particularly with respect to cutaneous affections; whilst we know also very well, that those affections which usually appeared as symptomatic only, were commonly neglected, or confounded together, under a general appellation.

DCCXXIII. The antecedent symptoms of anxiety, sighing, and pricking of the skin, which have been spoken of as peculiar to this disease, are, however, common to many others, and perhaps to all those in which sweatings are forced out by a warm regimen.

Of the symptoms said to be concomitant of this eruption, there are none which can be said to be constant and peculiar, but that of sweating. This, indeed, always precedes and accompanies the eruption; and while the miliary eruption attends many different diseases, it

never, however, appears in any of these, but after sweating; and, in persons laboring under these diseases, it does not appear, if sweating be avoided. It is, therefore, probable, that the eruption is the effect of sweating; and that it is the produce of a matter, not before prevailing in the mass of blood, but generated, under particular circumstances, in the skin itself. That it depends upon particular circumstances of the skin, appears further from hence, that the eruption seldom or never appears upon the face, although it affects the whole of the body besides; that it comes upon those places especially which are more closely covered; and that it can be brought out upon particular parts by external applications.

DCCXXIV. It is to be observed, that this eruptive disease differs from the other exanthemata in many circumstances; in its not being contagious, and, therefore, never epidemic; that the eruption appears at no determined period of the disease; that the eruption has no determined duration; that successive eruptions frequently appear in the course of the same fever; and that such eruptions frequently recur in the course of the same person's life.

All these circumstances render it extremely probable, that, in the miliary fever, the morbid matter is not a subsisting contagion communicated to the blood, and thence, in consequence of fever and assimilation, thrown out upon the surface of the body; but a matter occasionally produced in the skin itself, by sweating.

DCCXXV. This conclusion is further rendered probable from hence, that, while the miliary eruption has no peculiar symptoms, or concourse of symptoms, belonging to it; yet, upon occasion, it accompanies almost all febrile diseases, whether inflammatory or putrid, if these happen to be attended with sweating; and, from thence it may be presumed, that the miliary eruption is a symptomatic affection only, produced in the manner we have said.

DCCXXVI. But, as this symptomatic affection does not always accompany every instance of sweating, it may be

proper to inquire, what are the circumstances which especially determine this eruption to appear? To this, however, I can give no full and proper answer. I cannot say that there is any one circumstance which, in all cases, gives occasion to this eruption; nor can I say what different causes may, in different cases, give occasion to it. There is only one observation I can offer to the purpose of this inquiry; and it is, that, of the persons sweating under febrile diseases, those are especially liable to the miliary eruption, who have been previously weakened by large evacuations, particularly of blood. This will explain why it happens to lying in women more frequently than to any other persons; and, to confirm this explanation, I have remarked, that the eruption happened to women not in childbed, but who had been much subjected to a frequent and copious menstruation, and to an almost constant fluor albus. I have also had occasion to observe it happen to men in fevers, after wounds from which they had suffered a great loss of blood.

Further, that this eruption is produced by a certain state of debility, will appear probable, from its often occurring in fevers of the putrid kind, which are always attended with great debility. It is true, that it also sometimes attend inflammatory diseases, when it cannot be accounted for in the same manner; but I believe it will be found to attend especially those inflammatory diseases, in which the sweats have been long protracted, or frequently repeated, and which have thereby produced a debility, and perhaps a debilitating putrid diathesis.

DCCXXVII. It appears so clearly to me that this eruption is always a symptomatic and factitious affection, that I am persuaded it may be in most cases prevented, merely by avoiding sweats. Spontaneous sweatings, in the beginning of diseases, are very rarely critical; all sweatings, not evidently critical, should be prevented; and the promoting them, by increasing external heat, is commonly very pernicious. Even critical sweatings should hardly be encouraged by such means. If, there-

fore, spontaneous sweats arise, they are to be checked by the coolness of the chamber ; by the lightness and looseness of the bed clothes ; by the persons laying out their hands and arms ; and by their taking cold drink ; and, by these precautions, I think I have frequently prevented miliary eruptions, which were otherwise likely to have appeared, particularly in lying in women.

DCCXXVIII. But it may happen, when these precautions have been neglected, or from other circumstances, that a miliary eruption does actually appear ; and the question will then be put, How the case is to be treated ? It is a question of consequence ; because I believe that the matter here generated is often of a virulent kind ; it is frequently the offspring of putrefaction ; and, when treated by increasing the external heat of the body, it seems to acquire a virulence which produces those symptoms mentioned in DCCXIX. and proves certainly fatal.

It has been an unhappy opinion with most physicians, that eruptive diseases were ready to be hurt by cold ; and that it was therefore necessary to cover up the body very closely, so as thereby to increase the external heat. We now know that this is a mistaken opinion ; that increasing the external heat of the body is very generally mischievous ; and that several eruptions not only admit, but require the application of cold air. We are now persuaded, that the practice which formerly prevailed, in the case of miliary eruptions, of covering up the body close, and both by external means, and internal remedies, encouraging the sweatings which accompany this eruption, was highly pernicious, and commonly fatal. I am therefore of opinion, even when a miliary eruption has appeared, that in all cases where the sweating is not manifestly critical, we should employ all the several means of stopping it that are mentioned above ; and I have sometimes had occasion to observe, that even the admission of cool air was safe and useful.

DCCXXIX. This is in general the treatment of miliary eruptions ; but, at the same time, the remedies suited to the primary disease are to be employed ; and therefore, when the eruption happens to accompany inflammatory

affections, and when the fulness and hardness of the pulse, or other symptoms, show an inflammatory state present, the case is to be treated by blood letting, purging, and other antiphlogistic remedies.

Upon the other hand, when the miliary eruption attends diseases in which debility and putrefaction prevail; it will be proper to avoid all evacuations, and employ tonic and antiseptic remedies, particularly the Peruvian bark, cold drink, and cold air.

I shall conclude this subject with mentioning, that the venerable octogenarian practitioner, De Fischer, when treating of this subject, in laying down the indications of cure, has given this as one of them : "Excretionis periphericæ non primariam habere rationem."



C H A P. VIII.

OF THE REMAINING EXANTHEMATA :

Urticaria, Pemphigus, and Aphtha.

DCCXXX. THE Nettle Rash is a name applied to two different diseases. The one is the chronic eruption described by Dr. Heberden in the Medical Transactions, Vol. I. art. xvii. which, as not being a febrile disorder, does not belong to this place. The other is the Urticaria of our Synopsis, which, as taken into every system of Nosology as one of the Exanthemata Febrilia, is properly to be treated of here.

DCCXXXI. I have never observed this disease as contagious and epidemic; and the few sporadic cases of it which have occurred to me, have seldom taken the regular course described by authors. At the same time, as the accounts of different authors are not very uniform, and hardly consistent, I cannot enter further into the consideration of this subject; and I hope it is not very necessary, as on all hands it is agreed to be a mild disease, and such as seldom requires the use of remedies. It is

generally sufficient to observe an antiphlogistic regimen, and to keep the patient in a temperature that is neither hot nor cold.

DCCXXXII. The Pemphigus, or Vesicular Fever, is a rare and uncommon disease, and very few instances of it are recorded in the writings of physicians. As I have never had occasion to see it, it would be improper for me to treat of it, and I do not choose to repeat after others, while the disease has yet been little observed, and its character does not seem to be exactly ascertained. Vid. Acta Helvetica, vol. ii. p. 260. Synops. Nosolog. vol. ii. p. 149.

DCCXXXIII. The Aphtha, or Thrush, is a disease better known ; and as it commonly appears in infants, it is so well understood as not to need our treating of it here. As an idiopathic disease, affecting adults, I have not seen it in this country : But it seems to be more frequent in Holland ; and therefore, for the study of it, I refer to Dr. Boerhaave, and his commentator Van Swieten, whose works are in every body's hands.

DCCXXXIV. The Petechia has been, by all our Nosologists, enumerated amongst the exanthemata ; but as according to the opinion of most physicians, it is very justly held to be always a symptomatic affection only, I cannot give it a place here.

BOOK IV.

OF HEMORRHAGIES*

C H A P. I.

OF HEMORRHAGY IN GENERAL.

DCCXXXV. In establishing a class or order of diseases, under the title of *Hemorrhagies*, Nosologists have employed the single circumstance of an effusion of red blood, as the character of such a class or order. By this means, they have associated diseases which in their nature are very different ; but in every methodical distribution, such arbitrary and unnatural associations should be avoided as much as possible. Further, by that management Nosologists have suppressed or lost sight of an established and well founded distinction of hemorrhagies into Active and Passive.

DCCXXXVI. It is my design to restore this distinction ; and I shall therefore here, under the title of *Hemorrhagies*, comprehend those only which have been commonly called Active, that is, those attended with some degree of pyrexia ; which seem always to depend upon an increased impetus of the blood in the vessels pouring it out, and which chiefly arise from an internal cause. In this I follow Dr. Hoffman, who joins the active hemorrhagies with the febrile diseases ; and have accordingly established these hemorrhagies as an order in the class of *Pyrexiae*. From this order I exclude all those

* *Pyrexia*, attended with a flow of blood, not occasioned by external violence ; the blood, when drawn, has the same appearance as in cases of inflammation. *Syn. Nof.*

effusions of red blood that are owing entirely to external violence ; and all those which, though arising from internal causes, are however not attended with pyrexia, and which seem to be owing to a putrid fluidity of the blood, to the weakness or to the erosion of the vessels, rather than to any increased impetus of the blood in them.

DCCXXXVII. Before proceeding to treat of those proper hemorrhagies which form an order in our Nosophagy, I shall treat of active hemorrhagy in general ; and indeed the several genera and species to be treated of particularly afterwards, have so many circumstances in common with one another, that the general consideration to be now offered, will prove both proper and useful.

SECT. I. *Of the Phenomena of Hemorrhagy.*

DCCXXXVIII. The phenomena of hemorrhagy are generally the following :

Hemorrhagies happen especially in plethoric habits, and to persons of a sanguine temperament. They appear most commonly in the spring, or in the beginning of summer.

For some time, longer or shorter in different cases, before the blood flows, there are some symptoms of fulness and tension about the parts from whence the blood is to issue. In such parts as fall under our view, there are some redness, swelling, and sense of heat or of itching ; and in the internal parts, from which blood is to flow, there is a sense of weight and heat ; and in both cases, various pains are often felt in the neighboring parts.

DCCXXXIX. When these symptoms have subsisted for some time, some degree of a cold stage of pyrexia comes on, and a hot stage is formed ; during which the blood flows of a florid color, in a greater or lesser quantity, and continues to flow for a longer or shorter time ; but commonly, after some time, the effusion spontaneously ceases, and together with it the pyrexia also.

DCCXL. During the hot stage which precedes an hemorrhagy, the pulse is frequent, quick, full, and often

hard ; but, as the blood flows, the pulse becomes softer and less frequent.

DCCXLII. In hemorrhagies, blood drawn from a vein, does, upon its concreting, commonly show the gluten separated, or a crust formed, as in the cases of Phlegmasiae.

DCCXLIII. Hemorrhagies, from internal causes, having once happened, are apt, after a certain interval, to return ; in some cases very often, and frequently at stated periods.

DCCXLIV. These are, in general, the phenomena of hemorrhagy ; and if in some cases all of them be not exquisitely marked, or if perhaps some of them do not at all appear, it imports only, that in different cases the system is more or less generally affected ; and that in some cases there are purely topical hemorrhagies, as there are purely topical inflammations.

Sect. II. *Of the Proximate Cause of Hemorrhagy.*

DCCXLV. The pathology of hemorrhagy seems to be sufficiently obvious. Some inequality in the distribution of the blood, occasions a congestion in particular parts of the sanguiferous system ; that is, a greater quantity of blood is poured into certain vessels than their natural capacity is suited to receive. These vessels become thereby preternaturally distended ; and this distention, proving a stimulus to them, excites their action to a greater degree than usual, which, pushing the blood with unusual force into the extremities of these vessels, opens them by anastomosis, or rupture ; and if these extremities be loosely situated on external surfaces, or on the internal surfaces of certain cavities that open outwardly, a quantity of blood flows out of the body.

DCCXLVI. This reasoning will, in some measure, explain the production of hemorrhagy. But it appears to me, that in most cases there are some other circumstances that concur to produce it : For it is probable, that in consequence of congestion, a sense of resistance arises, and excites the action of the Vis Medicatrix Naturæ ; the exertions of which are usually made by the forma-

tion of a cold stage of pyrexia, inducing a more vigorous action of the vessels ; and the concurrence of this exertion more effectually opens the extremities, and occasions the flowing out of the blood.

DCCXLVI. What has been delivered in the two preceding paragraphs, seems to explain the whol ephenomena of hemorrhagy, except the circumstance of its frequent recurrence, which I apprehend may be explained in the following manner : The congestion, and consequent irritation, being taken off by the flowing of the blood ; this, therefore, soon after, spontaneously ceases ; but at the same time the internal causes which had before produced the unequal distribution of the blood, commonly remain, and must now operate the more readily, as the over stretched and relaxed vessels of the part will more easily admit of a congestion of blood in them, and consequently produce the same series of phenomena as before.

DCCXLVII. This may sufficiently explain the ordinary return of hemorrhagy : But there is still another circumstance, which, as commonly concurring, is to be taken notice of ; and that is, the general plethoric state of the system, which renders every cause of unequal distribution of more considerable effect. Though hemorrhagy may often depend upon the state of the vessels of a particular part being favorable to a congestion's being formed in them, yet, in order to that state's producing its effect, it is necessary that the whole system should be at least in its natural plethoric condition ; and if this should be in any degree increased beyond what is natural, it will still more certainly determine the effects of topical conformation to take place. The return of hemorrhagy, therefore, will be more certainly occasioned, if the system becomes preternaturally plethoric ; but hemorrhagy has always a tendency to increase the plethoric state of the system, and consequently to occasion its own return.

DCCXLVIII. To show that hemorrhagy does contribute to produce or increase the plethoric state of the system, it is only necessary to observe, that the quantity

of serous fluids being given, the state of the excretions depends upon a certain balance between the force of the larger arteries propelling the blood, and the resistance of the excretaries: But the force of the arteries depends upon their fulness and distension, chiefly given to them by the quantity of red globules and gluten, which are, for the greatest part, confined to the red arteries; and therefore the *spoliation* made by an hemorrhagy, being chiefly of red globules and gluten, the effusion of blood must leave the red arteries more empty and weak. In consequence of the weaker action of the red arteries, the excretions are in proportion diminished; and therefore, the ingesta continuing the same, more fluids will be accumulated in the larger vessels. It is by this means that the loss of blood by hemorrhagies, whether artificial or spontaneous, if within certain bounds, is commonly so soon recovered: But as the diminution of the excretions, from a less quantity of fluid being impelled into the excretaries, gives occasion to these vessels to fall into a contracted state; so, if this shall continue long, these vessels will become more rigid, and will not yield to the same impelling force as before. Although the arteries therefore, by new blood collected in them, shall have recovered their former fulness, tension, and force, yet this force will not be in balance with the resistance of the more rigid excretaries, so as to restore the former state of excretion; and consequently, a further accumulation will take place in the arteries, and an increase of their plethoric state be thereby induced. In this manner, we perceive more clearly, that hemorrhagy, as producing a more plethoric state of the system, has a tendency to occasion its own recurrence with greater violence; and as the renewal and further accumulation of blood require a determinate time, so, in the several repetitions of hemorrhagy, that time will be nearly the same; and therefore the returns of hemorrhagy will be commonly at stated periods, as has been observed frequently to happen.

DCCXLIX. I have thus explained the nature of hemorrhagy in general, as depending upon some inequality in

the distribution of the blood, occasioning a congestion of it in particular parts of the sanguiferous system. It is indeed probable, that in most persons the several parts of the sanguiferous system are in balance with one another; and that the density, and consequently the resistance in the several vessels, is in proportion to the quantity of blood which each should receive; from whence it frequently happens, that no inequality in the distribution of the blood takes place in the course of a long life. If, however, we consider that the sanguiferous system is constantly in a plethoric state, that is, that the vessels are constantly distended beyond that size which they would be of, if free from any distending force, we shall be satisfied that this state may be readily changed. For as, on the one hand, the vessels are elastic, so as to be under a constant tendency to contract upon the withdrawing of any part of the distending force; and, on the other hand, are not so rigid, but that, by an increase of the impetus of the blood in them, they may be more than ordinarily distended; so we can easily understand how, in most persons, causes of an increased contraction or distension may arise in one part or other of the system, or that an unequal distribution may take place; and how, in an exquisitely distended or plethoric system, a small inequality in the distribution of the blood may form those congestions which give occasion to hemorrhagy.

DCCL. In this manner I endeavor to explain how hemorrhagy may be occasioned at any period of life, or in any part of the body: But hemorrhagies happen in certain parts more frequently than in others, and at certain periods of life more readily than at others; and therefore, in delivering the general doctrine of hemorrhagy, it may be required that I should explain those circumstances which produce the specialties mentioned; and I shall now attempt it.

DCCLI. The human body, from being of a small bulk at its first formation, grows afterwards to a considerable size. This increase of bulk consists, in a great measure, in the increase of the quantity of fluids, and a proportional enlargement of the containing vessels. But,

at the same time, the quantity of solid matter is also gradually increased ; and in whatever manner we may suppose this to be done, it is probable that the progress, in the whole of the growth of animal bodies, depends upon the extension of the arterial system ; and such is the constitution of the sanguiferous system, that the motion of the blood in the arteries has a constant tendency to extend them in every dimension.

DCCLII. As the state of the animal solid is, at the first formation of the body, very lax and yielding ; so the extension of the system proceeds at first very fast : But, as the extension gives occasion to the apposition of more matter to the solid parts, these are, in proportion to their extension, constantly acquiring a greater density, and therefore giving more resistance to their further extension and growth. Accordingly, we observe, that as the growth of the body advances, its increase, in any given time, becomes proportionally less and less, till at length it ceases altogether.

DCCLIII. This is the general idea of the growth of the human body, till it attain the utmost bulk which it is capable of acquiring ; but, it is to be remarked, that this growth does not proceed equally in every part of the body, it being requisite for the economy of the system, that certain parts should be first evolved, and should also acquire their full bulk sooner than others. This appears particularly with respect to the head, the parts of which appear to be first evolved, and soonest to acquire their full size.

DCCLIV. To favor this unequal growth, it is presumed, that the dimensions or the laxity of the vessels of the head, or that the direction of the force of the blood, are adapted to the purpose ; and from what has been said in DCCLII. it will also certainly follow, that as the vessels of the head grow fastest, and soonest acquire their full size, so they will soonest also acquire that density which will prevent their further extension. While, however, the force of the heart, and the quantity of the fluids, with respect to the whole system, remain the same, the distending and extending powers will be directed to such

parts as have not yet acquired the same density and dimensions as those first evolved ; and thus the distending and extending powers will proceed to operate till every part of the system, in respect of density and resistance, shall have been brought to be in balance with every other, and till the whole be in balance with the force of the heart, so that there can be no further growth in any particular part, unless some preternatural circumstance shall happen to arise.

DCCLV. In this process of the growth of the body, as it seems in general to depend upon a certain balance between the force of the heart, or distending power, and the resistance of the solids ; so it will appear, that while the solids remain very lax and yielding, some occasional increase of the distending power may arise without producing any very perceptible disorder in the system. But it will also appear, that in proportion as the distending power and resistance of the solids come to be more nearly in exact balance with one another, so any increase of the distending power will more readily produce a rupture of vessels, which do not easily yield to extension.

DCCLVI. From all this, it must follow, that the effects of any unusually plethoric state of the system, will be different according as this shall occur at different periods of the growth of the body. Accordingly, it is evident, that if the plethoric state arises while the head is yet growing, and while the determination of the blood is still more to the head than to the other parts, the increased quantity of the blood will be especially determined to the head ; and as there also, at the same time, the balance between the distending and extending powers is most nearly adjusted, so the determination of the blood will most readily produce in that part a rupture of the vessels, or an hemorrhagy. Hence it is, that hemorrhagies of the nose so frequently happen in young persons ; and in these more readily, as they approach nearer to their acmé, or full growth ; or it may be said, perhaps more properly, as they approach nearer to the age of puberty, when perhaps in both sexes, but especial-

ly in the female, a new determination arises in the system.

DCCLVII. The determination of a greater quantity of blood to the vessels of the head, might be supposed to occasion a rupture of vessels in other parts of the head, as well as in the nose : But such a rupture does not commonly happen ; because in the nose, there is, for the purpose of sense, a considerable net work of blood vessels expanded on the internal surface of the nostrils, and covered only with thin and weak teguments. From this circumstance it is, that upon any increased impetus of the blood in the vessels of the head, those of the nose are most easily broken ; and the effusion from the nose taking place, it not only relieves the other extremities of the external carotid, to which the arteries of the nose chiefly belong, but relieves also, in a great measure, the system of the internal carotid. For, from the internal carotid, certain branches are sent to the nose, are spread out on its internal surface, and probably inosculated with the extremities of the external carotid ; so that, whichever of the extremities are broken, the *vis derivationis* of Haller will take place ; the effusion will relieve the whole sanguiferous system of the head ; and the same effusion will also commonly prevent an hemorrhagy happening at the same time in any other part of the body.

DCCLVIII. From these principles, it will appear why hemorrhagies of the nose, so frequent before the period of puberty, or of the acmé, seldom happen after these periods : And I must observe further, that although they should occur, they would not afford any objection to my doctrine, as such hemorrhagies might be imputed to a peculiar laxity of the vessels of the nose, and perhaps to a habit acquired with respect to these vessels, while the balance of the system might be otherwise duly adjusted.

DCCLIX. When the process of the growth of the body goes on regularly, and the balance of the system is properly adjusted to the gradual growth of the whole, as well as to the successive growth of the several parts, even a plethoric state does not produce any hemorrhagy, or at least any after that of the nose : But if, while the ple-

thoric state continues, any inequality shall also subsist in any of the parts of the system, congestions, hemorrhagic or inflammatory, may be still readily formed.

DCCLX. In general, it may be observed, that when the several parts of the system of the aorta have attained their full growth, and are duly balanced with one another, if then any considerable degree of plethora remain or arise, the nicety of the balance will be between the systems of the aorta and pulmonary artery, or between the vessels of the lungs and those of all the rest of the body. And although the lesser capacity of the vessels of the lungs is commonly compensated by the greater velocity of the blood in them ; yet, if this velocity be not always adjusted to the necessary compensation, it is probable that a plethoric state of the whole body will always be especially felt in the lungs ; and therefore, that an hemorrhagy, as the effect of a general plethora, may be frequently occasioned in the lungs, even though there be no fault in their conformation.

DCCLXI. In some cases, perhaps, an hemorrhagy from the lungs, or an hemoptysis, does arise from the general plethoric state of the body ; but an hemoptysis more frequently does, and may be expected to happen, from a faulty proportion between the capacity of the lungs and that of the rest of the body.

DCCLXII. When such a disproportion takes place, it will be evident, that an hemoptysis will especially happen about the time that the body is approaching to its acmé ; that is, when the system of the aorta has arrived at its utmost extension and resistance, and when therefore the plethoric state of the whole must especially affect the lungs.

DCCLXIII. Accordingly, it has been constantly observed, that the hemoptysis especially occurs about the time of the body's arriving at its acmé ; but I must remark also, that the hemorrhagy may occur sooner or later, according as the balance between the vessels of the lungs, and those of the system of the aorta, happens to be more or less exactly adjusted to one another ; and it may therefore often occur much later than the period men-

tioned, when that balance, though not quite even, is however not so ill adjusted, but that some other concurring causes are necessary to give it effect.

DCCLXIV. It was anciently remarked by Hippocrates, and has been confirmed by modern observation, that the hemoptysis generally occurs in persons between the age of fifteen and that of five and thirty ; that it may happen at any time between these two periods ; but that it seldom happens before the former, or after the latter ; and it may be proper here to inquire into the reason of these two limitations.

DCCLXV. With respect to the first, the reason of it has been already explained in DCCLXII. and DCCLXIII.

With respect to the second limitation, I expect that the reason of it will be understood from the following considerations :

It has been already observed, that the extension and growth of the body require the plethoric state of the arterial system ; and nature has provided for this, partly by the constitution of the blood being such, that a great portion of it is unfit to pass into the exhalants and excretaries ; partly by giving a certain density and resistance to the several exhalants and excretaries through which the fluids might pass out of the red arteries ; and partly, but especially, by a resistance in the veins to the free passage of the blood into them from the arteries.

DCCLXVI. With respect to this last and chief circumstance, it appears from the experiments of Sir Clifton Wintringham, in his *Experimental Inquiry*, that the proportional density of the coats of the veins to that of the coats of the arteries, is greater in young than in old animals : From which it may be presumed, that the resistance to the passage of the blood from the arteries into the veins, is greater in young animals than in old ; and, while this resistance continues, the plethoric state of the arteries must be constantly continued and supported. As, however, the density of the coats of the vessels, consisting chiefly of a cellular texture, is increased by pressure ; so, in proportion as the coats of the arteries are

more exposed to pressure by distension than those of the veins, the former, in the progress of the growth of the body, must increase much more in density than the latter ; and, therefore, the coats of the arteries, in respect of density and resistance, must come in time, not only to be in balance with those of the veins, but to prevail over them ; a fact which is sufficiently proved by the experience of the above mentioned ingenious author.

By these means the proportional quantities of blood in the arteries and veins must change in the course of life. In younger animals, the quantity of blood in the arteries must be proportionally greater than in old ones ; but, by the increasing density of the arteries, the quantity of blood in them must be continually diminishing, and that in the veins be proportionally increasing, so as at length to be in a proportionally greater quantity than that in the arteries. When this change happens in the proportional quantities of the blood in the arteries and veins, it must be evident, that the plethoric state of the arteries will be, in a great measure, taken off ; and, therefore, that the arterial hemorrhagy is no longer likely to happen ; but that, if a general plethoric state afterwards takes place in the system, it must especially appear in the veins.

DCCLXVII. The change I have mentioned to happen in the state of the arterial and venous systems, is properly supposed to take place in the human body about the age of thirty five, when it is manifest that the vigor of the body, which depends so much upon the fulness and tension of the arterial system, no longer increases ; and therefore it is, that the same age is the period, after which the arterial hemorrhagy, hemoptysis, hardly ever appears. It is true, there are instances of the hemoptysis happening at a later period ; but, it is for the reasons given (DCCLVIII,) which show, that an hemorrhagy may happen at any period of life, from accidental causes forming congestions, independent of the state of the balance of the system at that particular period.

DCCLXVIII. I have said (DCCLXVI.), that if, after the age of thirty five, a general and preternatural plethoric

state occur, it must especially appear in the venous system ; and I must now observe, that this venous plethora may also give occasion to hemorrhagy.

DCCLXIX. If a plethoric state of the venous system take place, it is to be presumed, that it will especially, and in the first place, affect the system of the vena portarum, in which the motion of the venous blood is more slow than elsewhere ; in which the motion of the blood is little assisted by external compression ; and in which, from the want of valves in the veins that form the vena portarum, the motion of the blood is little assisted by the compression that is applied ; while, from the same want of valves in those veins, the blood is more ready to regurgitate in them. Whether any regurgitation of the blood can produce an action in the veins, and which, inverted or directed towards their extremities, can force these, and occasion hemorrhagy, may perhaps be disputed; but it appears to me, that an hemorrhagy, produced by a plethoric state of the veins, may be explained in another and more probable manner. If the blood be accumulated in the veins, from any interruption of its proper course, that accumulation must resist the free passage of the blood from the arteries into the veins. This, again, must produce some congestion in the extremities of the red arteries, and, therefore, some increased action in them, which must be determined with more than usual force, both upon the extremities of the arteries, and upon the exhalants proceeding from them ; and this force may occasion an effusion of blood, either by anastomosis or rupture.

DCCLXX. In this manner I apprehend the hemorrhoidal flux is to be explained, so far as it depends upon the state of the whole system. It appears most commonly to proceed from the extremities of the hemorrhoidal vessels, which, being the most dependent and distant branches of those veins that form the vena portarum, are, therefore, the most readily affected by every accumulation of blood in that system of veins, and, consequently, by any general plethora in the venous system.

DCCLXXI. It is here to be observed, that I have spoken of this hemorrhagy as proceeding from the hemorrhoidal vessels only, as indeed it most commonly does ; but it will be readily understood, that the same accumulation and resistance to the venous blood may, from various causes, affect many of the extremities of the vena portarum, which lie very superficially upon the internal surface of the alimentary canal, and give occasion to what has been called the *Morbus Niger* or *Melæna*.

DCCLXXII. Another part, in which an unusually plethoric state of the veins may have particular effects, and occasion hemorrhagy, is the head. In this, the venous system is of a peculiar conformation, and such as seems intended by nature to give there a slower motion to the venous blood. If, therefore, the plethoric state of the venous system in general, which seems to increase as life advances, should at length increase to a great degree, it may very readily affect the venous vessels of the head, and produce there such a resistance to the arterial blood, as to determine this to be poured out from the nose, or into the cavity of the cranium. The special effect of the latter effusion will be, to produce the disease termed Apoplexy ; and which, therefore, is properly named by Dr. HOFFMAN, *Hemorrhagia Cerebri* ; and the explanation of its cause, which I have now given, explains well why it happens especially to men of large heads and short necks, and to men in the decline of life, when the powers promoting the motion of the blood are much weakened.

DCCLXXIII. I have thus attempted to give the history of the plethoric and hemorrhagic states of the human body, as they occur at the different periods of life ; and hope I have thereby explained, not only the nature of hemorrhagy in general, but also of the particular hemorrhages which most commonly appear, and as they occur successively at the different periods of life.

SECT. III. Of the Remote Causes of Hemorrhagy.

DCCLXXIV. In the explanation hitherto given, I have specially considered the predisposition to hemorrhagy ;

but it is proper also, and even necessary, to take notice of the occasional causes, which not only concur with the predisponent, inexciting hemorrhagy, but may also sometimes be the sole causes of it.

DCCLXXV. These occasional causes are,

1. External heat, which, by rarifying the blood, produces or increases the plethoric state of the body; and the same heat, as giving a stimulus to the whole system, must urge any particular determinations before established still further, or may urge to excess any inequality, otherwise innocent; so that, in either way, external heat may immediately excite hemorrhagies to which there was a predisposition, or may form congestions where there were none before, and thereby occasion hemorrhagy.

2. A considerable and sudden diminution of the weight of the atmosphere, which seems to occasion the same effects as heat, by producing also an expansion of the blood.

3. Whatever increases the force of the circulation, and thereby the velocity of the blood, may operate in the same manner as heat, in urging not only previous determinations with violence, but also in urging to excess inequalities, otherwise innocent. All violent exercise, therefore, and especially all violent efforts, which, not only by a larger and longer inspiration, but also, by the simultaneous action of many muscles interrupting the free motion of the blood, impel it with unusual force into the extreme vessels more generally, and, according to the different postures of the body, and mode of the effort, into certain vessels more particularly.

Among the causes increasing the force of the circulation, anger, and other violent active passions, are to be reckoned.

4. The violent exercise of particular parts of the body. If these are already affected with congestions, or liable to them, such exercise may be considered as a stimulus applied to the vessels of that particular part. Thus, any violent exercise of respiration may excite hemoptysis, or occasion its return.

5. The postures of the body increasing determinations, or ligatures occasioning accumulations of the blood in particular parts of the body.

6. A determination into certain vessels rendered habitual by the frequent repetition of hemorrhagy from them.

7. Cold, externally applied, as changing the distribution of the blood, and determining it in greater quantity into the internal parts.

SECT. IV. *Of the Cure of Hemorrhagy.*

DCCLXXVI. Having thus considered the proximate and remote causes of hemorrhagy in general, our next busines is, to treat of the cure of the disease in the same manner.

In entering upon this subject, the first question which presents itself, is, Whether the cure of hemorrhagies ought to be attempted by art, or if they should be left to the conduct of nature?

DCCLXXVII. The latter opinion was the favorite doctrine of the celebrated Dr. STAHL, and his followers. They maintained, that the human body is much disposed to a plethoric state, and, consequently, to many disorders, which nature endeavors to obviate and relieve, by exciting hemorrhagy; that this, therefore is often necessary to the balance and health of the system; that it is accordingly to be generally encouraged, sometimes solicited, and is not to be suppressed, unless when it goes to great excess, or happens in parts in which it may be dangerous.

DCCLXXVIII. Much of this doctrine may be admitted. The human body, upon many occasions, becomes supernaturally plethoric: and the dangerous consequences which might from thence be apprehended, seem to be obviated by an hemorrhagy taking place; and further, the necessity of hemorrhagy often appears from hence, that the suppression of it seems to occasion many disorders.

All this seems to be just; but, in the conclusion drawn from it, there is a fallacy.

DCCLXXIX. It appears to me certain, that hemorrhagy, either upon its first attack, or upon its after recurrence, is never necessary to the health of the body, excepting upon the supposition, that the plethoric state which seems to require the evacuation, cannot be otherwise prevented or removed ; and as I imagine it possible, by other means, to prevent or remove a plethoric state, so I do not think that hemorrhagy is, in all cases, necessary. In general, I am of opinion, that hemorrhagy is to be avoided,

1. Because it does not always happen in parts where it is safe.

2. Because often, while it does relieve a plethoric state, it may, at the same time, induce a very dangerous disease.

3. Because it may often go to excess, and either endanger life, or induce a dangerous infirmity.

And, lastly, Because it has a tendency to increase the plethoric state it was meant to relieve ; to occasion its own recurrence (DCCLXXI.) ; and thereby to induce a habit, which, if left to the precarious and unequal operation of nature, may, from the frequent errors of this, be attended with much danger.

DCCLXXX. It is further to be considered, that hemorrhagies do not always arise from the necessities of the system, but often proceed from incidental causes. It appears to me, that all hemorrhagies of the latter kind may be immediately suppressed, and the repetition of them, as it induces a plethora, and a habit not otherwise necessary, may be prevented with great advantage.

DCCLXXXI. Upon the whole of this subject, I conclude that every preternatural hemorrhagy, or in other words, every one except that of the menses in females, is to be avoided, and especially the returns of it prevented ; and I, therefore, now proceed to mention, how hemorrhagy, and its recurrences, may and should be prevented.

DCCLXXXII. From the principles delivered above, it will immediately appear, that the prevention, either of the first attacks, or of the returns of hemorrhagy, will

chiefly, and in the first place, depend upon the preventing or removing any considerable degree of a plethoric state which may happen to prevail in the body. It is true, that where the hemorrhagy depends upon the particular conformation of certain parts, rather than upon the general plethoric state of the whole ; the measures for removing or preventing the latter, may not always be sufficient for preventing hemorrhagy : but at the same time it must be evident, that determinations, in consequence of the conformation of particular parts, will always be urged more or less, in proportion to the greater or lesser degree of the plethoric state of the whole system ; and therefore, that even in the cases depending upon particular conformation, the preventing or removing an unusually plethoric state, will always be a chief means of preventing hemorrhagy. It is further to be attended to, that there may be several inequalities in the balance of the system, which may have little or no effect unless when the system becomes preternaturally plethoric ; and therefore, that in all cases the preventing or removing of the plethoric state of the system, will be a chief means of preventing the first attacks, or the returns of hemorrhagy. It now therefore remains to explain, how the plethoric state of the system is to be prevented or removed.

DCCLXXXIII. The fluids of the human body are in continual waste by the excretions, but are commonly replaced by the aliments taken in ; and if the quantity of aliments in any measure exceed that of the excretions, an increase of the quantity of the fluids of the body, or, in other words, a plethoric state must necessarily arise. This, to a certain degree, is requisite for the growth of the body : but even then, if the proportion of the aliments to the excretions, be greater than is suited to the growth of the body, and more certainly still, if, after the growth is completed, when an equality between the *ingesta* and the *excreta* should be established, the disproportion still continue, a preternaturally plethoric state must arise. In both cases, it is evident, that the plethora must be prevented or corrected by adjusting the in-

gesta and excreta to each other ; which generally may be done, either by diminishing the ingesta, or by increasing the excreta. The former may be effected by the management of diet, the latter by the management of exercise.

DCCLXXXIV. The ingesta may be diminished, either by giving aliment in less quantity than usual, or by giving aliments of a less nutritious quality ; that is, aliments of a substance, which, under the same bulk and weight, contain less of a matter capable of being converted into animal fluids, and more of a matter ready to pass off by the excretions, and consequently less of a matter to be retained and accumulated in the vessels.

The choice of aliments suited to these purposes, must be left to be directed by the doctrines of the *Materia Medica*.

DCCLXXXV. The increasing of the excreta, and thereby diminishing the plethoric state of the system, is to be obtained by increasing the exercise of the body ; and generally for adjusting the balance between the ingesta and excreta, and thereby obviating the plethoric state, it is necessary that exercise, in a due measure, be very constantly employed.

DCCLXXXVI. The observing abstinence, and the employment of exercise for obviating or removing the plethoric state of the body, were formerly considered pretty fully, when treating of the gout (DXLVIII. to DLII.) ; so that the less is necessary to be said here : and it is now only requisite to observe, that the same doubts, as in cases of the gout, do not occur here with regard to the safety of those measures, which, in a plethoric state of the body disposing to hemorrhagy, are always admissible and proper. Here, however, it is to be observed, that some choice in the mode of exercise is necessary, and that it should be different according to the particular determinations which may happen to prevail in the system. In general, in the case of plethora disposing to hemorrhagy, bodily exercise will always be hazardous, and gestation more commonly safe.

DCCLXXXVII. Artificial evacuations may be employed to diminish the plethoric state of the body ; and when at any time it has become considerable, and immediately threatens a disease, these evacuations should be made to the quantity that the symptoms seem to require. But it is constantly to be attended to, that blood lettings are improperly employed to prevent a plethora, as they have a tendency to increase it (DCCXI.) ; and as they require to be often repeated, and are thereby apt to induce a habit which may be attended with much danger.

DCCLXXXVIII. While a plethora, and thereby the predisposition to hemorrhagy is avoided or removed, the other measures necessary for preventing the occurrence of this, are those for avoiding the remote causes. These have been enumerated in DCCLXXV. ; and the means of avoiding them, so far as within our power, are sufficiently obvious.

DCCLXXXIX. Having thus mentioned the means of preventing either the first attacks, or the recurrence of hemorrhagy, I must next say how it is to be managed when it has actually come on.

DCCXC. When an hemorrhagy has come on, which appears to have arisen from a preternaturally plethoric state, or from some change in the balance of the sanguiferous system, no measures are to be immediately taken for suppressing it ; as we may expect, that when the quantity of blood necessary for the relief of the system is poured out, the effusion will spontaneously cease.

DCCXCI. In many cases, however, it may be suspected, that the quantity of blood poured out, is not exactly in proportion to the necessities of the system, either for relieving a general plethora, or a particular congestion, but that it is often to a greater quantity than these require. This we suppose to happen in consequence of an inflammatory diathesis prevailing, and of a febrile spasm being formed ; and therefore it is in many cases proper, as well as for the most part safe, to moderate the evacuation, and, when it threatens to go to excess, to suppress it altogether.

DCCXCII. An hemorrhagy may be moderated by avoiding any irritation that might concur to increase it ; so that every part of the antiphlogistic regimen is to be observed ; in particular, external heat, both as it rarifies the fluids, and stimulates the solids, is to be carefully avoided : and it is probable, that in all cases an hemorrhagy may be safely moderated by cool air applied, and cold drink exhibited.

DCCXCIII. A second means, for the same purpose, is, the use of refrigerant medicines, and particularly of acids and nitre.

DCCXCIV. A third means which has been frequently employed, is that of blood letting. The propriety of this practice may be doubtful, as the quantity of blood poured out by the hemorrhagy, may be supposed to answer the purpose of an evacuation in any other way ; and I am ready to allow, that the practice has been often superfluous, and sometimes hurtful, by making a greater evacuation than was necessary or safe. At the same time, I apprehend it is not for the mere purpose of evacuating, that blood letting is to be practised in the cure of hemorrhagy ; but that it is further necessary for taking off the inflammatory diathesis which prevails, and the febrile spasm that has been formed. Accordingly, in the case of hemorrhagy, when the pulse is not only frequent, but quick and full, and does not become softer or slower upon the flowing of the blood, and that the effusion is profuse, and threatens to continue so, it appears to me that blood letting may be necessary, and I have often found it useful. It seems probable also, that the particular circumstances of venesection may render it more powerful for taking off the tension and inflammatory irritation of the system, than any gradual flow from an artery.

DCCXCV. That a spasm of the extreme vessels has a share in supporting hemorrhagy, appears to me probable from hence, that blistering has been often found useful in moderating and suppressing the disease.

DCCXCVI. Do emetics and vomiting contribute to the cure of hemorrhagy? See DR. BRYAN ROBINSON on the virtues and power of medicines.

DCCXCVII. When an hemorrhagy is very profuse, and seems to endanger life, or even threatens to induce a dangerous infirmity, it is agreed on all hands, that it is to be immediately suppressed by every means in our power; and particularly, that, besides the means above mentioned for moderating the disease, astringents, internal or external, where the latter can be applied, are to be employed for suppressing it.

DCCXCVIII. The internal astringents are either vegetable or fossil.

The vegetable astringents are seldom very powerful in the cure of any hemorrhagies, except those of the alimentary canal.

The fossil astringents are more powerful; but some choice amongst the different kinds may be proper.

The chalybeates, so frequently employed, do not appear to me to be very powerful.

The preparations of lead are certainly more so, but are otherwise of so pernicious a quality, that they should not be employed except in cases of the utmost danger. The Tinctura Saturnina, or Antiphthisica, as it has been called, appears to be of little efficacy; but whether from the small portion of lead which it contains, or from the state in which the lead is in it, I am uncertain.

The fossil astringent that appears to me the most powerful, and at the same time the most safe, is alum.

DCCXCIX. External astringents, when they can be applied, are more effectual than the internal.

The choice of these is left to the surgeons.

DCCC. The most powerful of all astringents appears to me to be cold, which may be employed either by applying cold water to the surface of the body or by throwing it into the internal parts.

DCCCI. For suppressing hemorrhagies, many superstitious remedies and charms have been recommended, and pretended to have been employed with success. The seeming success of these however, has been generally

owing to the by flanders mistaking a spontaneous ceasing of the hemorrhagy for the effect of the remedy. At the same time, I believe, that those remedies may have been sometimes useful, by impressing the mind with horror, awe, or dread.

DCCCII. Upon occasion of profuse hemorrhages, opiates, have been employed with advantage; and, when the fulness and inflammatory diathesis of the system have been previously taken off by the hemorrhagy itself, or by bloodletting, I think opiates may be employed with safety.

DCCCIII. For restraining hemorrhagy, ligatures have been applied upon the limbs, in the view of retarding the return of the venous blood from the extremities; but they appear to me to be of uncertain and ambiguous use.

DCCCIV. In the case of profuse hemorrhages, no pains are to be taken to prevent a Deliquium Animi, or fainting, as the happening of this is often the most certain means of stopping the hemorrhagy.

DCCCV. Having thus delivered the general doctrine of hemorrhagy, I proceed to consider the particular cases of it. It may perhaps be remarked, that I have marked fewer of these than are commonly enumerated by the nosologists; but my reasons for differing from these authors, must be left to a nosological discussion, to be entered into elsewhere more properly than here.

C H A P. II.

OF THE EPISTAXIS*, OR HEMORRHAGY OF THE NOSE.

DCCCVI. THE state of the vessels upon the internal surface of the nose being such as already mentioned (DCCLVII.), renders an hemorrhagy from that more frequent than from any other part of the body.

* Pain, or heaviness of the head, redness of the face, accompanied with a flow of blood from the nostrils. *Syn. Nas.*

DCCCVII. The blood commonly flows from one nostril only, and probably because an hemorrhagy from one vessel relieves the congestion in all the neighboring vessels.

The blood flowing from both nostrils at the same time, shows commonly a more considerable disease.

DCCCVIII. This hemorrhagy happens to persons of every constitution and temperament, but most frequently to those of a plethoric habit, and sanguine temperament. It happens to both sexes, but most frequently to the male.

DCCCIX. This hemorrhagy may occur at any time of life ; but most commonly happens to young persons, owing to the state of the balance of the system peculiar to that age, as mentioned in DCCLVI.

DCCCX. Although generally it happens to persons before they have arrived at their full growth, and more rarely afterwards, yet sometimes it happens to persons after their acm , and during the state of manhood : and it must then be imputed to an unusually plethoric state of the system ; to an habitual determination of the blood to the vessels of the nose ; or to the particular weakness of these.

DCCCXI. In all these cases the disease may be considered as an hemorrhagy purely arterial, and depending upon an arterial plethora ; but it sometimes occurs in the decline of life, when probably it depends upon, and may be considered as a mark of a venous plethora of the vessels of the head. See DCCLXXII.

DCCCXII. This hemorrhagy happens also at any period of life, in certain febrile diseases, which are altogether or partly of an inflammatory nature, and which show a particular determination of the blood to the vessels of the head. These diseases often admit of a solution by this hemorrhagy, when it may be properly termed *critical*.

DCCCXIII. The disease sometimes comes on without any previous symptoms ; particularly when some external violence has a share in producing it. But when it proceeds entirely from an internal cause, it is commonly

preceded by headachs, redness of the eyes, a florid color of the face, an unusual pulsation in the temples, a sense of fulness about the nose, and an itching of the nostrils. A bound belly, pale urine, coldness of the feet, and cold shivering over the whole body, are also sometimes among the symptoms that precede the disease.

DCCCXIV. From the weakness of the vessels of the nose, the blood often flows from them without any considerable effort of the whole system, and therefore without any observable febrile disorder ; which, however, in many cases is, in all its circumstances, very discernible.

DCCCXV. An hemorrhagy of the nose happening to young persons, is, and may generally be considered as a slight disease of little consequence, and hardly requiring any remedy. But even in young persons, when it recurs very frequently, and is very copious, it will require particular attention, as it is to be considered as a mark of arterial plethora ; and, as frequently returning, it may increase the plethoric state, which in a more advanced stage of life, may give the blood a determination to parts from which the hemorrhagy would be more dangerous. All this will more particularly require attention, according as the marks of plethora, and of particular congestion, preceding the hemorrhagy, are more considerable ; and as the flowing of the blood is attended with a more considerable degree of febrile disorder.

DCCCXVI. When the epistaxis happens to persons after their acmé, returning frequently, and flowing copioufly, it is always to be considered as a dangerous disease, and as more certainly threatening the consequences mentioned in the last paragraph.

DCCCXVII. When this hemorrhagy happens in the decline of life, it may be considered as in itself very salutary : but at the same time, it is to be considered as a mark of a very dangerous state of the system ; that is, as a mark of a very strong tendency to a venous plethora in the vessels of the head : and I have accordingly observed it often followed by apoplexy, palsey, or such like diseases.

DCCCXVIII. When an hemorrhagy from the nose happens in febrile diseases, as mentioned in DCCCXII., and is in pretty large quantity, it may be considered as critical and salutary ; but it is very apt to be profuse, and even in this way dangerous.

It upon some occasions occurs during the eruptive fever of several exanthemata, and is in such cases sometimes salutary ; but if these exanthemata be accompanied with any putrid tendency, this hemorrhagy, like artificial blood lettings, may have very bad effects.

DCCCXIX. Having thus explained the several circumstances of epistaxis, I proceed to consider the management and cure of it. I use the expression of *management*, because it has been usually thought to require no cure, but that nature should be allowed to throw out blood in this way very frequently ; and as often as it appears to arise from internal causes, that is, from a state of the system supposed to require such evacuation.

DCCCXX. I am however of opinion, for the reasons given in DCCLXXIX, that this disease is very seldom to be left to the conduct of nature ; and that in all cases it should be moderated by keeping the patient in cool air ; by giving cold drink ; by keeping the body and head erect ; by avoiding any blowing of the nose, speaking, or other irritation : and when the blood has flowed for some time, without showing any tendency to cease, a profuse bleeding is to be prevented by measures employed to stop it, such as pressing the nostril from which the blood flows, washing the face with cold water, or applying this to other parts of the body.

DCCCXXI. Even in the case of young persons, where the disease is least hazardous, and even in the first attacks, I judge such measures to be proper : but they will be still more proper if the disease frequently recurs without any external violence ; if the returns shall happen to persons of a habit disposed to be plethoric ; and more particularly, if the marks of a plethoric state appear in the precedent symptoms, (DCCCXIII.)

DCCCXXII. Even in young persons, if the bleeding be very profuse and long continued, and more especially if

the pulse become weak and the face pale, I apprehend it will be proper to suppress the hemorrhagy by every means in our power. See DCCXCVII. and the following paragraphs.

DCCCXXIII. Further, in the same case of young persons, when the returns of this hemorrhagy become frequent, and especially with the marks of a plethoric habit, I think it necessary to employ such a regimen as may prevent a plethoric state (DCCLXXXIII.—DCCLXXXVII.) At the same time, care should be taken to avoid all circumstances which may determine the blood more fully to the vessels of the head, or prevent its free return from them ; and by keeping an open belly, to make some derivation from them.

DCCCXXIV. In adult persons, liable to frequent returns of the epistaxis, the whole of the measures proposed (DCCCXXIII.), are more certainly and freely to be employed. When, with the circumstances mentioned in DCCCXXIII. the tendency to a profuse hemorrhagy appears, a bleeding at the arm may be proper, even in young persons ; but, in the case of adults, it will be still more allowable, and even necessary.

DCCCXXV. In persons of any age liable to frequent returns of this hemorrhagy, when the measures proposed in DCCCXXV. *et seq.* shall have been neglected, or, from peculiar circumstances in the balance of the system, shall have proved ineffectual, and the symptoms threatening hemorrhagy (DCCCXXXVIII) shall appear, it will then be proper, by blood letting, cooling purgatives, and every part of the antiphlogistic regimen, to prevent the hemorrhagy, or at least to prevent its being profuse when it does happen.

DCCCXXVI. In the circumstances just now mentioned (DCCCXXV,), the measures proposed are proper, and even necessary ; but it should at the same time be observed, that these are practised with much less advantage than those pointed out in DCCCXXIV. : because, though those suggested here may prevent the coming on of the hemorrhagy for the present, they certainly however dispose to the return of that plethoric state which required

their being used ; and there can be no proper security against returns of the disease, but by pursuing the means proposed in DCCCXXIII.

DCCCXXVII. When the hemorrhagy of the nose happens to persons approaching to their full growth, and when its returns have been preceded by the symptoms DCCCXIII. it may be supposed, that if the returns can be prevented by the measures proposed in DCCCXXV., these may be safely employed, as the plethoric state induced will be rendered safe, by the change which is soon to take place in the balance of the system. This however, cannot be admitted ; as the evacuations practised upon this plan will have all the consequences which, I have already observed, may follow the recurrence of the hemorrhagy itself.

DCCCXXVIII. When the hemorrhagy of the nose shall be found to make its returns at nearly stated periods, the measures for preventing it (DCCCXXV.) may be practised with greater certainty ; and, upon every repetition of blood letting, by diminishing the quantity taken away, its tendency to induce a plethora may be in some measure avoided. When indeed the repetition of evacuations is truly unavoidable, the diminishing them upon every repetition is properly practised : but it is a practice of nice and precarious management, and should by no means be trusted to, so far as to supersede the measures proposed in DCCCXXV. wherever these can be admitted.

DCCCXXIX. When the hemorrhagy of the nose happens in consequence of a venous plethora in the vessels of the head, as in DCCLXXII., the flowing of the blood pretty largely may be allowed, especially when it happens after the suppression or ceasing of the menstrual or hemorrhoidal flux. But though the flowing of the blood is on its first occurring, to be allowed, there is nothing more proper than guarding against its returns. This is to be done not only by the measures proposed in DCLXXXIII. *et seq.* but as the effects of a plethoric state of the vessels of the head are very uncertain, so, upon any appearance of it, and especially upon any threatening of hemorrhagy, the plethora is to be removed, and the

hemorrhagy to be obviated immediately by proper evacuations, as blood letting, purging, and iissues, or by restoring suppressed evacuations, where this can be done.

C H A P. III.

OF THE HEMOPTYSIS*, OR HEMORRHAGY FROM THE LUNGS.

SECT. I. *Of the Phenomena and Causes of Hemoptysis.*

DCCCXXX. WHEN, after some affection of the breast, blood is thrown out from the mouth, and is brought out with more or less of coughing, there can be no doubt that it comes from the lungs ; and this generally ascertains the disease of which I am now to treat. But there are cases in which the source of the blood spit out is uncertain ; and therefore, some other considerations to be mentioned hereafter, are often necessary to ascertain the existence of an hemoptysis.

DCCCXXXI. The blood-vessels of the lungs are more numerous than those of any other part of the body of the same bulk. These vessels, of the largest size, as they arise from the heart, are more immediately than in any other part subdivided into vessels of the smallest size ; and these small vessels, spread out near to the internal surfaces of the bronchial cavities, are situated in a loose cellular texture, and covered by a tender membrane only : so that, considering how readily and frequently these vessels are gorged with blood, we may understand why an hemorrhagy from them is, next to that of the nose, the most frequent of any ; and particularly, why any violent shock given to the whole body so readily occasions an hemoptysis.

* Redness of the cheeks ; sense of uneasiness or pain, and sometimes of heat, in the breast ; dyspnœa ; tickling of the fauces ; cough, accompanied with the rejection of blood, which is not unfrequently frothy. *Syn. Nos.*

DCCCXXXII. An hemoptysis may be occasioned by external violence, at any period of life; and I have explained above (DCCXL.), why, in adult persons, while the arterial plethora still prevails in the system, that is, from the age of sixteen to that of five and thirty, an hemoptysis may at any time be produced, merely by a plethoric state of the lungs.

DCCCXXXIII. But it has been also observed above (DCCXL.), that an hemoptysis more frequently arises from a faulty proportion between the capacity of the vessels of the lungs and that of those of the rest of the body. Accordingly it is often a hereditary disease, which implies a peculiar and faulty conformation. And the disease also happens especially to persons who discover the smaller capacity of their lungs, by the narrowness of their chest, and by the prominency of their shoulders; which last is a mark of their having been long liable to a difficult respiration.

DCCCXXXIV. With these circumstances also the disease happens especially to persons of a sanguine temperament; in whom particularly the arterial plethora prevails. It happens likewise to persons of a slender delicate make, of which a long neck is a mark; to persons of much sensibility, and irritability, and therefore of quick parts, whose bodies are generally of a delicate structure; to persons who have been formerly liable to frequent hemorrhagies of the nose; to persons who have suffered a suppression of any hemorrhagy they had formerly been liable to, the most frequent instance of which is in females who have suffered a suppression of their menstrual flux; and lastly, to persons who have suffered the amputation of any considerable limb.

DCCCXXXV. In most of these cases (DCCCXXXIV.), the disease happens especially to persons about the time of their coming to their full growth, or soon after it, and this for the reasons fully set forth above.

DCCCXXXVI. From all that has been said from DCCCXXXVI. to DCCCXXXV. the predisponent cause of hemoptysis will be sufficiently understood, and the disease may happen from the mere circumstance of the predisponent cause

arising to a considerable degree. In the predisposed, however it is often brought on by the concurrence of various occasional and exciting causes. One of these, and perhaps a frequent one, is external heat, which, even when in no great degree, will bring on the disease in spring, and the beginning of summer, while the heat rarifies the blood more than it relaxes the solids, which had been before contracted by the cold of winter. Another exciting cause is a sudden diminution of the weight of the atmosphere, especially when concurring with any effort in bodily exercise. This effort too, alone, may often, in the predisposed, be the exciting cause, and more particularly, any violent exercise of respiration. In short, in the predisposed, any degree of external violence also may bring on the disease.

DCCCXXXVII. Occasioned by one or other of these causes (DCCCXXXVI.), the disease comes on with a sense of weight and anxiety in the chest, some uneasiness in breathing, some pain of the breast, or other parts of the thorax, and some sense of heat under the sternum ; and very often, before the disease appears, a saltish taste is perceived in the mouth.

DCCCXXXVIII. Immediately before the appearance of blood, a degree of irritation is felt at the top of the larynx. To relieve this, a hawking is made, which brings up a little blood, of a florid color, and somewhat frothy. The irritation returns ; and, in the same manner, more blood of a like kind is brought up, with some noise in the wind-pipe, as of air passing through a fluid.

DCCCXXXIX. This is commonly the manner in which the hemoptysis begins ; but sometimes at the very first the blood comes up by coughing, or at least somewhat of coughing accompanies the hawking just now mentioned.

DCCCXL. The blood issuing is sometimes at first in very small quantity, and soon disappears altogether : but, in other cases, especially when it repeatedly occurs, it is in greater quantity, and frequently continues to appear at times for several days together. It is sometimes profuse ; but rarely in such quantity as, either by its excess, or by its sudden suffocation, to prove immediately

mortal. It commonly either ceases spontaneously, or is stopped by the remedies employed.

DCCCXL. When blood is thrown out from the mouth it is not always easy to determine from what internal part it proceeds; whether from the internal surface of the mouth itself, from the fauces, or adjoining cavities of the nose, from the stomach, or from the lungs. It is however very necessary to distinguish the different cases; and, in most instances, it may be done by attending to the following considerations.

DCCCXLI. When the blood spit out proceeds from some part of the internal surface of the mouth itself, it comes out without any hawking or coughing; and generally, upon inspection, the particular source of it becomes evident.

DCCCXLIII. When blood proceeds from the fauces, or adjoining cavities of the nose, it may be brought out by hawking, and sometimes by coughing, in the manner we have described in DCCCXXXVII. and DCCCXXXIX.; so that in this way a doubt may arise concerning its real source. A patient often lays hold of these circumstances to please himself with the opinion of its coming from the fauces, and he may be allowed to do so: but a physician cannot readily be deceived, if he consider, that a bleeding from the fauces is more rare than one from the lungs; that the former seldom happens but to persons who have been before liable either to an hemorrhagy of the nose, or to some evident cause of erosion; and in most cases, by looking into the fauces, the distillation of the blood, if it comes from thence, will be perceived.

DCCCXLIV. When blood proceeds from the lungs, the manner in which it is brought up will commonly show from whence it comes: but, independent of that, there are many circumstances which may occur to point it out, such as the period of life, the habit of body, and other marks of a predisposition (DCCCXXXIII.—DCCCXXXV.); and, together with these the occasional causes (DCCCXXXVI.) having been immediately before applied.

DCCXLV. When vomiting accompanies the throwing out of blood from the mouth, as vomiting and cough-

ing often mutually excite each other ; so they may be frequently joined, and render it doubtful, whether the blood thrown out proceeds from the lungs or from the stomach. We may, however, generally decide, by considering, that blood does not so frequently proceed from the stomach as from the lungs ; that blood proceeding from the stomach commonly appears in greater quantity, than when it proceeds from the lungs ; that the blood proceeding from the lungs is usually of a florid color, and mixed with a little frothy mucus only ; whereas the blood from the stomach is commonly of a darker color, more grumous, and mixed with the other contents of the stomach ; that the coughing or vomiting, according as the one or the other first arises in the cases in which they are afterwards joined, may sometimes point out the source of the blood ; and, lastly, that much may be learned from the circumstances and symptoms which have preceded the hemorrhagy.

Those which precede the hemoptysis, enumerated in DCCCXXXVII., are most of them evident marks of an affection of the lungs. And, on the other hand, the hematemesis, or issuing of blood from the stomach, has also its peculiar symptoms and circumstances preceding it ; as, for instance, some morbid affection of this organ, or, at least, some pain, anxiety, and sense of weight, referred distinctly to the region of the stomach. To all this may be added, that the vomiting of blood happens more frequently to females than to males ; and to the former, in consequence of a suppression of their menstrual flux, and, by attending to all these considerations (DCCCXLII—DCCCXLV.), the presence of the hemoptysis may commonly be sufficiently ascertained.

SECT. II. *Of the Cure of Hemoptysis.*

DCCCXLVI. This disease is sometimes attended with little danger ; as, when it happens to females in consequence of a suppression of the menses ; when, without any marks of a predisposition, it arises from external

violence ; or when from whatever cause arising, it leaves behind it no cough, dyspnœa, or other affection of the lungs. Even in such cases, however, a danger may arise from too large an wound being made in the vessels of the lungs ; from a quantity of red blood being left to stagnate in the cavity of the bronchiæ ; and particularly, from any determination of the blood being made into the vessels of the lungs, which, by renewing the hemorrhagy, may have dangerous consequences. In every instance, therefore, of hemoptysis, the effusion is to be moderated by the several means mentioned (DCCXCII. to DCCXCV.)

DCCCXLVII. These measures are especially necessary when the hemoptysis arises in consequence of predisposition ; and in all cases where there is the appearance of a large effusion, or where the hemorrhagy frequently returns, the effusion is not only to be moderated, but to be entirely stopped, and the returns of it prevented by every means in our power. See DCCXCVII. and following.

DCCCXLVIII. To stop an hemoptysis, or prevent the returns of it, two medicines have been frequently employed, neither of which I can approve of. These are chalybeates, and the Peruvian bark. As both of them contribute to increase the phlogistic diathesis of the system they can hardly be safe in any case of active hemorrhagy, and I have frequently found them hurtful.

DCCCXLIX. As the hemoptysis which happens in consequence of predisposition, is always attended with a phlogistic diathesis ; and, as the bad consequences of the disease are especially to be apprehended from the continuance of that diathesis ; so this is to be industriously taken off by blood letting, in greater or smaller quantity, and more or less frequently repeated, according as the symptoms shall direct. At the same time, cooling purgatives are to be employed, and every part of the antiphlogistic regimen is to be strictly enjoined. The refrigerants may also be administered, taking care, however, that the acids, and more especially the nitre, do not excite coughing.

DCCCL. From what was observed in DCCXCV. it will appear, that blistering upon the breast or back may be a remedy of hemoptysis, when it is present ; and that issues in the same places may be useful in preventing the recurrence of it when it has ceased.

DCCCLI. The avoiding of motion is generally a proper part of the antiphlogistic regimen ; and, in the hemoptysis, nothing is more necessary than avoiding bodily exercise ; but some kinds of gestation, as sailing, and travelling in an easy carriage on smooth roads, have often proved a remedy.

DCCCLI. Such is the treatment I can propose for the hemoptysis, considered merely as an hemorrhagy : But when, in spite of all our precautions, it continues to recur, it is often followed by an ulceration of the lungs, and a phthisis pulmonalis. This, therefore, I must now proceed to consider ; but as it arises also from other causes besides the hemoptysis, it must be treated of with a more general view.

C H A P. IV.

OF THE PHTHISIS PULMONALIS*, OR CONSUMPTION OF THE LUNGS.

SECT. I. *Of the Phenomena and Causes of the Phthisis Pulmonalis.*

DCCCLIII. THE Phthisis Pulmonalis I would define to be, an expectoration of pus or purulent matter from the lungs, attended with a hectic fever.

As this is the principal species of phthisis, I shall frequently, in this chapter, employ the general term of phthisis, though strictly meaning the phthisis pulmonalis.

DCCCLIV. I have met with some instances of an expectoration of purulent matter, continuing for many years,

* Emaciation of the body, and debility, attended with a cough ; hectic fever ; and generally a purulent expectoration. *Syn. Nos.*

accompanied with very few symptoms of hectic, and at least without any hectic exquisitely formed ; but, in none of these instances, were the persons so entirely free from symptoms of hectic, as to form any exception to the general definition.

DCCCLV. In every instance of an expectoration of pus, I presume there is an ulceration of the lungs. The late Mr. De Haen is the only author that I know of who has advanced another opinion, and has supposed, that pus may be formed in the blood-vessels, and be from thence poured into the bronchiæ. Admitting his fact, I have attempted an explanation of the appearance of pus without ulceration in CCCXLIX.; but, after all, I cannot help suspecting the accuracy of his observations ; must entirely reject his explanation of them ; must, however, allow, that we still want facts to support the explanation I have offered, and doubt much if it will apply to any case of phthisis. For these reasons, I still conclude, agreeably to the faith of all other dissections, and the opinions of all physicians, that the symptoms mentioned in our definition depend always upon an ulceration formed in the lungs.

DCCCLVI. It has sometimes happened, that a catarrh was attended with an expectoration of a matter so much resembling pus, that physicians have been often uncertain whether it was mucus or pus, and, therefore, whether the disease was a catarrh or a phthisis. It is often of consequence to determine these questions ; and it appears to me that it may be generally done, with sufficient certainty, from the following considerations, of which each particular is not always singly decisive, but when they are taken together can hardly deceive us :

1. From the color of the matter ; as mucus is naturally transparent, and pus always opaque. When mucus becomes opaque, as it sometimes does, it becomes white, yellow, or greenish ; but the last mentioned color is hardly ever so remarkable in mucus as in pus.

2. From the consistence, as mucus is more viscid and coherent, and pus less so, and may be said to be more friable. When mucus is thrown into water, it is not

readily diffused, but remains united in uniform and circular masses ; but pus, in the same circumstances, though not readily diffused, does not remain so uniformly united, and by a little agitation is broken into ragged fragments.

3. From the odor, which is seldom perceived in mucus, but frequently in pus. It has been proposed to try the odor of the matter expectorated, by throwing it upon live coals ; but in such a trial both mucus and pus give out a disagreeable smell, and it is not easy to distinguish between them.

4. From the specific gravity compared with water ; and, indeed, it is usual for the mucus of the lungs to swim on the surface of water, and for pus to sink in it. But in this we may sometimes be deceived, as pus which has entangled a great deal of air may swim, and mucus that is free from air may sink.

5. From the mixture which is discernible in the matter brought up ; for if a yellow or greenish matter appears surrounded with a quantity of transparent or less opaque and less colored matter, the more strongly colored matter may be generally considered as pus ; as it is not easy to understand how one portion of the mucus of the lungs can be very considerably changed, while the rest of it is very little so, or remains in its ordinary state.

6. From the admixture of certain substances with the matter thrown out from the lungs. To this purpose we are informed by the experiments of the late Mr. Charles Darwin : a. That the vitriolic acid dissolves both mucus and pus, but most readily the former : That if water be added to such a solution of mucus, this is separated, and either swims on the surface, or, divided into flocculi, is suspended in the liquor ; whereas, when water is added to a like solution of pus, this falls to the bottom, or by agitation is diffused so as to exhibit an uniformly turbid liquor. b. That a solution of the caustic fixed alkali, after some time, dissolves mucus, and generally pus ; and if water be added to such solutions, the pus is precipitated, but the mucus is not. From such experiments it is

supposed, that pus and mucus may be certainly distinguished from each other.

7. From the expectoration's being attended with a hectic fever. A catarrh, or expectoration of mucus, is often attended with fever; but never, so far as I have observed, with such a fever as I am presently to describe as a hectic. This, in my opinion, is the most certain mark of a purulent state in some part of the body; and if others have thought differently I am persuaded that it has been owing to this, that, presuming upon the mortal nature of a confirmed or purulent phthisis, they have considered every case in which a recovery happened, as a catarrh only: but that they may have been mistaken in this, shall be shown hereafter.

DCCCLVII. Having thus considered the first part of the character of the phthisis pulmonalis as a mark of an ulceration of the lungs; and having just now said, that the other part of the character, that is, the hectic fever, is a mark or indication of the same thing; it is proper now to consider this here, as I had with that view omitted it before (LXXIV.)

DCCCLVIII. A hectic fever has the form of a remittent, which has exacerbations twice every day. The first of these occurs about noon, sometimes a little sooner or later; and a slight remission of it happens about five afternoon. This last is soon succeeded by another exacerbation, gradually increasing till after midnight: but after two o'clock of the morning, a remission takes place, which becomes more and more considerable as the morning advances. The exacerbations are frequently attended with some degree of cold shivering; or at least the patient is exceedingly sensible to any coolness of the air, seeks external heat, and often complains of a sense of cold, when, to the thermometer, his skin is preternaturally warm. Of these exacerbations, that of the evening is always the most considerable.

DCCCLIX. It has commonly been given as a part of the character of a hectic fever, that an exacerbation of it commonly appears after the taking food; and it is true that dinner, which is taken at noon, or after it, does

seem to occasion some exacerbation. But this must not make us judge the mid day exacerbation to be the effect of eating only ; for I have often observed it to come on an hour before noon, and often some hours before dinner ; which, in this country at present, is not taken till some time after noon. It is indeed to be observed, that in almost every person, the taking food occasions some degree of fever : but I am persuaded this would not appear so considerable in a hectic, were it not that an exacerbation of fever is present from another cause ; and accordingly, the taking food in the morning has hardly any sensible effect.

DCCCLX. I have thus described the general form of hectic fever ; but many circumstances attending it, are further to be taken notice of.

The fever I have described does not commonly subsist long, till the evening exacerbations become attended with sweatings ; which continue to recur, and to prove more and more profuse through the whole course of the disease.

Almost from the first appearance of the hectic, the urine is high colored, and deposits a copious branny red sediment, which hardly ever falls close to the bottom of the vessel.

In the hectic, the appetite for food is generally less impaired than in any other kind of fever.

The thirst is seldom considerable ; the mouth is commonly moist ; and as the disease advances, the tongue becomes free from all fur, appears very clean ; and in the advanced stages of the disease, the tongue and fauces appear to be somewhat inflamed, and become more or less covered with aphthæ.

As the disease advances, the red vessels of the adnata of the eye disappear, and the whole of the adnata becomes of a pearly white.

The face is commonly pale ; but, during the exacerbations, a florid red, and an almost circumscribed spot, appear on each cheek.

For some time, in the course of a hectic, the belly is bound ; but, in the advanced stages of it, a diarrhœa al-

most always comes on, and continues to recur frequently during the rest of the disease, alternating in some measure with the sweatings mentioned above.

The disease is always attended with a debility, which gradually increases during the course of it.

During the same course an emaciation takes place, and goes to a greater degree than in almost any other case.

The falling off of the hairs, and the adunque form of the nails, are also symptoms of the want of nourishment.

Towards the end of the disease, the feet are often affected with oedematous swellings.

The exacerbations of the fever are seldom attended with any headache, and scarcely ever with delirium.

The senses and judgment commonly remain entire to the very end of the disease ; and the mind, for the most part, is confident and full of hope.

Some days before death, a delirium comes on, and commonly continues to the end.

DCCCLXI. The hectic fever now described (DCCCLVIII.—DCCCLX.) as accompanying a purulent state of the lungs, is perhaps the case in which it most frequently appears : but I have never seen it in any case, when there was not evidently, or when I had not ground to suppose there was a permanent purulency or ulceration in some external or internal part*. It was for this reason, that in LXXIV, I concluded it to be a symptomatic fever only. Indeed, it appears to me to be always the effect of

* This opinion is extremely questionable. There are cases on record, where a well formed hectic was observed, without any ulceration ever having been detected on dissection. It has indeed been attempted to be proved, that those fevers, whose origin cannot be traced to the absorption of aerated purulent matter, differ from the genuine hectic ; but the reasoning employed does not appear altogether satisfactory. See Dr. Drake's Paper on Consumption in the 2d. Vol. of Medical Journal. There is no doubt, however, that the absorption of aerated matter is the chief cause of hectic ; its being exposed to the air giving it a singular virulence, which is supposed to arise from its attraction for oxygen, and the consequent formation of an acid. The learned author of the Zoonomia, has the following remarks : "Matter produced by suppuration, will lie concealed in the body many weeks, or even months, without producing hectic fever ; but as soon as the wound is opened, so as to admit air to the surface of the ulcer, a hectic fever supervenes, even in a very few hours. Hence, when ulcers are to be healed, it is necessary, carefully to exclude the air from them. Hence we have one cause which prevents pulmonary ulcers from healing, "which is, their being perpetually exposed to the air."

an acrimony absorbed from abscesses or ulcers, although it is not equally the effect of every sort of acrimony ; for the scorbutic and cancerous kinds often subsist long in the body without producing a hectic. What is the precise state of the acrimony producing this I cannot determine, but it seems to be chiefly that of a vitiated purity.

DCCCLXII. However this may be, it appears, that the hectic's depending in general upon an acrimony, explains its peculiar circumstances. The febrile state seems to be chiefly an exacerbation of that frequency of the pulse, which occurs twice every day to persons in health, and may be produced by acrimony alone. These exacerbations, indeed, do not happen without the proper circumstances of pyrexia ; but the spasm of the extreme vessels in a hectic does not seem to be so considerable as in other fevers : and hence the state of sweat and urine which appears so early and so constantly in heantics. Upon the same supposition of an acrimony corrupting the fluids, and debilitating the moving powers, I think that most of the other symptoms may also be explained.

DCCCLXIII. Having thus considered the characteristic symptoms and chief part of the proximate cause of the phthisis pulmonalis, I proceed to observe, that an ulcer of the lungs, and its concomitant circumstances of hectic fever, may arise from different previous affections of the lungs : all of which however may, in my opinion, be referred to five heads ; that is, 1. To an hemoptysis ; 2. To a suppuration of the lungs in consequence of pneumonia ; 3. To catarrh ; 4. To asthma ; or, 5. To a tubercle. These several affections, as causes of ulcers, shall now be considered in the order mentioned.

DCCCLXIV. It has been commonly supposed, that an hemoptysis was naturally, and almost necessarily followed by an ulcer of the lungs ; but I will presume to say, that in general this is a mistake ; for there have been many instances of hemoptysis occasioned by external violence, without being followed by any ulcer of the lungs ; and there have also been many instances of hemoptysis from

an internal cause, without any consequent ulceration. And this too has been the case, not only when the hemoptysis happened to young persons, and recurred for several times, but when it has often recurred during the course of a long life. It is indeed easy to conceive, that a rupture of the vessels of the lungs, like that of the vessels of the nose, may be often healed, as the surgeons speak, by the first intention. It is probable therefore, that it is an hemoptysis in particular circumstances only, which is necessarily followed by an ulcer; but what these circumstances are, it is difficult to determine. It is possible, that merely the degree of rupture, or frequently repeated rupture, preventing the wound from healing by the first intention, may occasion an ulcer; or it is possible, that red blood effused, and not brought up entirely by coughing, may, by stagnating in the bronchiæ, become acrid, and erode the parts. These however are but suppositions, not supported by any clear evidence. And if we consider that those cases of hemoptysis which follow the predisposition (DCCCXXXII—DCCCXXXV.) are those especially which end in phthisis, we shall be led to suspect that there are some other circumstances which concur here to determine the consequence of hemoptysis, as I shall hereafter endeavor to show.

DCCCLXV. Any supposition, however, which we can make with respect to the innocence of an hemoptysis, must not supersede the measures proposed above for its cure: both because we cannot certainly foresee what may be the consequences of such an accident, and because the measures above suggested are safe; for upon every supposition, it is a diathesis phlogistica that may urge on every bad consequence to be apprehended.

DCCCLXVI. The second cause of an ulceration of the lungs, to be considered, is a suppuration formed in consequence of pneumonia.

DCCCLXVII. From the symptoms mentioned in DCCCLVIN.—DCCCLIX., it may with reason be concluded, that an abscess, or, as it is called, a *vomica*, is formed in some part of the pleura, and most frequently in that portion of it investing the lungs. Here purulent matter fre-

quently remains for some time, as if inclosed in a cyst : but commonly it is not long before it comes to be either absorbed, and transferred to some other part of the body ; or that it breaks through into the cavity of the lungs, or into that of the thorax. In the latter case, it produces the disease called *empyema* ; but it is only when the matter is poured into the cavity of the bronchiæ, that it properly constitutes the phthisis pulmonalis. In the case of empyema, the chief circumstances of a phthisis are indeed also present ; but I shall here consider that case only in which the abscess of the lungs gives occasion to a purulent expectoration.

DCCCLXVIII. An abscess of the lungs, in consequence of pneumonia, is not always followed by a phthisis ; for sometimes a hectic fever is not formed : the matter poured into the bronchiæ is a proper and benign pus, which is frequently coughed up very readily, and spit out : and though this purulent expectoration should continue for some time, yet if a hectic does not come on, the ulcer soon heals, and every morbid symptom disappears. This has happened so frequently that we may conclude, that neither the access of the air, nor the constant motion of the lungs, will prevent an ulcer of these parts from healing, if the matter of it be well conditioned. An abscess of the lungs, therefore, does not necessarily produce the phthisis pulmonalis ; and if it be followed by such a disease, it must be in consequence of particular circumstances which corrupt the purulent matter produced, render it unsuitable to the healing of the ulcer, and at the same time make it afford an acrimony, which being absorbed, produces a hectic and its consequences.

DCCCLXIX. The corruption of the matter of such abscesses may be owing to several causes ; as, 1. That the matter effused during the inflammation, had not been a pure serum fit to be converted into a laudable pus, but had been united with other matters which prevented that, and gave a considerable acrimony to the whole : Or, 2. That the matter effused, and converted into pus, either merely by a long stagnation in a vomica, or by its connection with an empyema, had been so corrupted as

to become unfit for the purpose of pus, in the healing of the ulcer. These seem to be possible causes of the corruption of matter in abscesses, so as to make it the occasion of a phthisis in persons otherwise sound; but it is probable, that a pneumonic abscess does especially produce phthisis when it happens to persons previously disposed to that disease, and therefore only as it concurs with some other causes of it.

DCCCLXX. The third cause supposed to produce phthisis, is a catarrh; which in many cases seems, in length of time, to have the expectoration of mucus proper to it, gradually changed into an expectoration of pus; and at the same time, by the addition of a hectic fever, the disease, which was at first a pure catarrh, is converted into a phthisis. This supposition, however, is not easily to be admitted. The catarrh is properly an affection of the mucous glands of the trachea and bronchiæ, analogous to the coryza, and less violent kinds of cynanche tonsillaris, which very seldom terminate in suppuration. And although a catarrh should be disposed to such termination, yet the ulcer produced might readily heal up, as it does in the case of a cynanche tonsillaris; and therefore should not produce a phthisis.

DCCCLXXI. Further, the catarrh, as purely the effect of cold, is generally a mild disease, as well as of short duration; and of the numerous instances of it, there are at most but very few cases which can be said to have ended in phthisis. In all those cases in which this seems to have happened, it is to me probable, that the persons affected were peculiarly predisposed to phthisis. And the beginning of phthisis so often resembles a catarrh, that the former may have been mistaken for the latter. Besides, to increase the fallacy, it often happens that the application of cold, which is the most frequent cause of catarrh, is also frequently the exciting cause of the cough which proves the beginning of phthisis.

DCCCLXXII. It is to me therefore probable, that a catarrh is very seldom the foundation of phthisis; but I would not positively assert that it never is so: for it is possible, that the cases of a more violent catarrh may

have joined with them a pneumatic affection, which may end in a suppuration ; or it may happen, that a long continued catarrh, by the violent agitation of the lungs in coughing, will produce some of those tubercles which are presently to be mentioned as the most frequent cause of phthisis.

DCCCLXXIII. It must be particularly observed here, that nothing said in DCCCLXXII. should allow us to neglect any appearance of catarrh, as is too frequently done ; for it may be either the beginning of a phthisis, which is mistaken for a genuine catarrh, or that even as a catarrh continuing long, it may produce a phthisis, as in DCCCLXXII.

DCCCLXXIV. Many physicians have supposed an acrimony of the fluids eroding some of the vessels of the lungs, to be a frequent cause of ulceration and phthisis. But this appears to me to be a mere supposition : for, in any of the instances of the production of phthisis which I have seen, there was no evidence of any acrimony of the blood capable of eroding the vessels. It is true, indeed, that in many cases an acrimony subsisting in some part of the fluids, is the cause of the disease ; but it is at the same time probable, that this acrimony operates by producing tubercles, rather than by any direct erosion.

DCCCLXXV. It has been mentioned in DCCCLXIII. that an asthma may be considered as one of the causes of phthisis : and by asthma, I mean that species of it which has been commonly named the spasmodic. This disease frequently subsists very long without producing any other, and may have its own peculiar fatal termination, as shall be explained hereafter. But I have seen it frequently end in phthisis ; and in such cases I suppose it to operate in the manner above alleged of catarrh, that is, by producing tubercles, and their consequences, which shall be presently mentioned.

DCCCLXXVI. I come now to consider the fifth head of the causes of phthisis, and which I apprehend to be the most frequent of any. This I have said, in general, to be tubercles ; by which term are meant, certain small

tumours, which have the appearance of indurated glands. Dissections have frequently shown such tubercles formed in the lungs ; and although at first indolent, yet at length they become inflamed, and are thereby changed into little abscesses, or vomicæ, which breaking, and pouring their matter into the bronchiæ give a purulent expectoration, and thus lay the foundation of phthisis.

DCCCLXXVII. Though the matter expectorated upon these occasions has the appearance of pus, it is seldom that of a laudable kind ; and as the ulcers do not readily heal, but are attended with a hectic fever, for the most part ending fatally, I presume that the matter of the ulcers is imbued with a peculiarly noxious acrimony, which prevents their healing, and produces a phthisis in all its circumstances, as mentioned above.

DCCCLXXVIII. It is very probable that the acrimony which thus discovers itself in the ulcers, existed before and produced the tubercles themselves ; and it is to this acrimony that we must trace up the cause of the phthisis following these tubercles. This acrimony is probably, in different cases, of different kinds ; and it will not be easy to determine its varieties ; but to a certain length I shall attempt it.

DCCCLXXIX. In one case, and that too a very frequent one, of phthisis, it appears, that the noxious acrimony is of the same kind with that which prevails in the scrophula. This may be concluded from observing, that a phthisis, at its usual period, frequently attacks persons born of scrophulous parents ; that is, of parents who had been affected with scrophula in their younger years : that very often, when the phthisis appears, there occur at the same time some lymphatic tumours in the external parts ; and very often I have found the tables mesenterica, which is a scrophulous affection, joined with the phthisis pulmonalis. To all this I would add, that even when no scrophulous affection has either manifestly preceded or accompanied a phthisis, this last however most commonly affects persons of a habit resembling the scrophulous ; that is, persons of a sanguine, or of a sanguino-melancholic temperament, who have very fine

skins, rosy complexions, large veins, soft flesh, and thick upper lip : and further, that in such persons the phthisis comes on in the same manner that it does in persons having tubercles, as shall be immediately explained.

DCCCLXXX. Another species of acrimony producing tubercles of the lungs, and thereby phthisis, may be said to be the exanthematic. It is well known, that the small-pox sometimes, and more frequently the measles, lay the foundation of phthisis. It is probable also, that other exanthemata have the same effect ; and from the phenomena of the disease, and the dissections of persons who have died of it, it is probable, that all the exanthemata may occasion a phthisis, by affording a matter which in the first place produces tubercles.

DCCCLXXXI. Another acrimony, which seems sometimes to produce phthisis, is the siphylitic : but whether such an acrimony produces phthisis in any other persons than the previously disposed, does not appear to me certain.

DCCCLXXXII. What other species of acrimony, such as from scurvy, from pus absorbed from other parts of the body, from suppressed eruptions, or from other sources, may also produce tubercles and phthisis, I cannot now decide, but must leave to be determined by those who have had experience of such cases.

DCCCLXXXIII. There is one peculiar case of phthisis, which from my own experience I can take notice of. This is the case of phthisis from a calcareous matter formed in the lungs, and coughed up, frequently with a little blood, sometimes with mucus only, and sometimes with pus. How this matter is generated, or in what precise part of the lungs it is seated, I acknowledge myself ignorant. In three cases of this kind which have occurred to me, there was at the same time no appearance of stony or earthy concretions in any other part of the body. In one of these cases, an exquisitely formed phthisis came on, and proved mortal : while in the other two, the symptoms of phthisis were never fully formed ; and after some time, merely by a milk diet, and avoiding irritation, the patients entirely recovered.

DCCCLXXXIV. Another foundation for phthisis, analogous, as I judge, to that of tubercles, is that which occurs to certain artificers, whose employments keep them almost constantly exposed to dust ; such as stone-cutters, millers, flax-dressers, and some others. I have not observed in this country many instances of phthisis which could be referred to this cause ; but from RAMAZZINI, MORGAGNI, and some other writers, we must conclude such cases to be more frequent in the southern parts of Europe.

DCCCLXXXV. Besides those now mentioned, there are probably some other causes producing tubercles, which have not yet been ascertained by observation ; and it is likely, that in the state of tubercles there is a variety not yet accounted for : but all this must be left to future observation and inquiry.

DCCCLXXXVI. It has been frequently supposed by physicians, that the phthisis is a contagious disease ; and I dare not assert that it never is such : but in many hundred instances of the disease which I have seen, there has been hardly one which to me could appear to have arisen from contagion. It is possible, that in warmer climates the effects of contagion may be more discernible.

After having said that a phthisis arises from tubercles more frequently than from any other cause, and after having attempted to assign the variety of these, I now proceed to mention the peculiar circumstances and symptoms which usually accompany the coming on of the disease from tubercles.

DCCCLXXXVII. A tuberculous and purulent state of the lungs has been observed in very young children, and in some others at several different periods before the age of puberty and full growth ; but instances of this kind are rare : and the attack of phthisis, which we have reason to impute to tubercles, usually happens at the same period which I have assigned for the coming on of the hemoptysis.

DCCCLXXXVIII. The phthisis from tubercles does also generally affect the same habits as the hemoptysis, that is, persons of a slender make, of long necks, narrow chests, and prominent shoulders ; but very frequently the per-

Persons liable to tubercles have less of the florid countenance, and of the other marks of an exquisitely sanguine temperament, than the persons liable to hemoptysis.

DCCCLXXXIX. This disease, arising from tubercles, usually commences with a slight and short cough, which becomes habitual, is often little remarked by those affected, and sometimes so little as to be absolutely denied by them. At the same time, their breathing becomes easily hurried by any bodily motion, their body grows leaner, and they become languid and indolent. This state sometimes continues for a year, or even for two years, without the persons making any complaint of it, excepting only that they are affected by cold more readily than usual, which frequently increases their cough, and produces some catarrh. This, again, however, is sometimes relieved ; is supposed to have arisen from cold alone ; and, therefore, gives no alarm either to the patient or to his friends, nor leads them to take any precautions.

DCCCXC. Upon one or other of these occasions of catching cold, as we commonly speak, the cough becomes more considerable ; is particularly troublesome upon the patient's lying down at night, and in this state continues longer than is usual in the case of a simple catarrh. This is more especially to call for attention, if the increase and continuance of cough come on during the summer season.

DCCCXCI. The cough which comes on as in DCCCLXXXIX. is very often, for a long time, without any expectoration ; but when, from repeatedly catching cold, it becomes more constant, it is then, at the same time, attended with some expectoration, which is most considerable in the mornings. The matter of this expectoration becomes by degrees more copious, more viscid, and more opaque ; at length of a yellow or greenish color, and of a purulent appearance. The whole of the matter, however, is not always at once entirely changed in this manner ; but, while one part of it retains the usual form of mucus, another suffers the changes now described.

DCCCXCII. When the cough increases, and continues very frequent through the night, and when the matter

expectorated undergoes the changes I have mentioned the breathing at the same time becomes more difficult, and the emaciation and weakness go on also increasing. In the female sex, as the disease advances, and sometimes early in its progress, the menses cease to flow ; and this circumstance is to be considered as commonly the effect, although the sex themselves are ready to believe it the sole cause of the disease.

DCCCXCIII. When the cough comes on as in DCCCLXXXIX. the pulse is often natural, and for some time after continues to be so ; but the symptoms have seldom subsisted long before the pulse becomes frequent, and sometimes to a considerable degree, without much of the other symptoms of fever. At length, however, evening exacerbations become remarkable, and by degrees the fever assumes the exquisite form of hectic, as described in DCCC-LVIII.—DCCCLX.

DCCCXCIV. It is seldom that the cough, expectoration, and fever go on increasing, in the manner now described, without some pain being felt in some part of the thorax. It is usually and most frequently felt at first under the sternum, and that especially, or almost only, upon occasion of coughing ; but very often, and that too early, in the course of the disease, a pain is felt on one side, sometimes very constantly, and so as to prevent the person from lying easily upon that side ; but, at other times, the pain is felt only upon a full inspiration, or upon coughing. Even when no pain is felt, it generally happens, that phthisical persons cannot lie easily on some one of their sides, without having their difficulty of breathing increased, and their cough excited.

DCCCXCV. The phthisis begins, and sometimes proceeds to its fatal issue, in the manner described from DCCCLXXXIX. to DCCCXCV., without any appearance of hemoptysis. Such cases are, indeed, rare ; but it is very common for the disease to advance far, and even to an evident purulence and hectic state, without any appearance of blood in the spitting ; so that it may be affirmed the disease is frequently not founded in hemoptysis. At the same time, we must allow, not only that it sometimes

begins with an hemoptysis, as is said in DCCCLXIV. ; but further, that it seldom happens, that, in the progress of the disease, more or less of an hemoptysis does not appear. Some degree of blood-spitting does, indeed, appear sometimes in the state mentioned DCCCLXXXIX. DCCCXCIII., but more commonly in the more advanced stages of the disease only, and particularly upon the first appearance of purulence. However this may be, it is seldom, in the phthisis from tubercles, that the hemoptysis is considerable, or requires any remedies different from those which are otherwise necessary for the state of the tubercles.

DCCCXCVI. I have now described a succession of symptoms which, in different cases, occupy more or less time. In this climate they very often take up some years, the symptoms appearing especially in the winter and spring ; commonly becoming easier, and sometimes almost disappearing, during the summer ; but returning again in winter, they at length, after two or three years, prove fatal, towards the end of spring or beginning of summer.

DCCCXCVII. In this disease, the prognosis is, for the most part, unfavorable. Of those affected with it, the greater number die ; but there are also many of them who recover entirely, after having been in very unpromising circumstances. What are, however, the circumstances more certainly determining to a happy or to a fatal event, I have not yet been able to ascertain.

DCCCXCVIII. The following aphorisms are the result of my observations.

A phthisis pulmonalis from hemoptysis, is more frequently recovered than one from tubercles.

An hemoptysis not only is not always followed by a phthisis, as we have said above (RCCXLIV.); but even when followed by an ulceration, the ulceration is sometimes attended with little of hectic, and frequently admits of being soon healed. Even when the hemoptysis and ulceration have happened to be repeated, there are instances of persons recovering entirely after several such repetitions.

A phthisis from a suppuration in consequence of pneumonic inflammation, is that which most rarely

occurs in this climate ; and a phthisis does not always follow such suppuration, when the abscess formed soon breaks, and discharges a laudable pus ; but, if the abscess continue long shut up, and till after a considerable degree of hectic has been formed, a phthisis is then produced, equally dangerous as that from other causes.

A phthisis from tubercles has, I think, been recovered ; but it is, of all others, the most dangerous ; and, when arising from a hereditary taint, is almost certainly fatal.

The danger of a phthisis, from whatever cause it may have arisen, is most certainly to be judged of by the degree to which the hectic and its consequences have arrived. From a certain degree of emaciation, debility, profuse sweating, and diarrhoea, no person recovers.

A mania coming on, has been found to remove all the symptoms, and sometimes has entirely cured the disease ; but, in other cases, upon the going off of the mania, the phthisis has recurred, and proved fatal.

The pregnancy of women has often retarded the progress of a phthisis ; but commonly it is only till after delivery, when the symptoms of phthisis return with violence, and soon prove fatal.

SECT. II. *Of the Cure of Phthisis.*

DCCXCIX. From what has been just now said, it will readily appear, that the cure of the phthisis pulmonalis must be exceedingly difficult, and that even the utmost care and attention in the employment of remedies have seldom succeeded. It may be doubtful whether this failure is to be imputed to the imperfection of our art, or to the absolutely incurable nature of the disease. I am extremely averse in any case to admit of the latter supposition, and can always readily allow of the former ; but, in the mean time, must mention here, what has been attempted towards either curing or moderating the violence of this disease.

DCCCV. It must be obvious, that, according to the different circumstances of this disease, the method of cure

must be different. Our first attention should be employed in watching the approach of the disease, and preventing its proceeding to an incurable state.

In all persons of a phthisical habit, and especially in those born of phthisical parents, the slightest symptoms of the approach of phthisis, at the phthisical period of life, ought to be attended to.

DCCCCI. When an hemoptysis occurs, though it be not always followed with ulceration and phthisis, these, however, are always to be apprehended, and every precaution is to be taken against them. This is especially to be done, by employing every means of moderating the hemorrhagy, and of preventing its return, directed in DCCCCXII. *et seq.*; and these precautions ought to be continued for several years after the occurrence of the hemoptysis.

DCCCCII. The phthisis which follows a suppuration from pneumonic inflammation, can only be prevented with certainty, by obtaining, a resolution of such inflammation. What may be attempted towards the cure of an abscess and ulcer which have taken place, I shall speak of hereafter.

DCCCCIII. I have said, it is doubtful if a genuine catarrh ever produces a phthisis, but have allowed that it possibly may; and both upon this account and upon account of the ambiguity which may arise, whether the appearing catarrh be a primary disease, or the effect of a tubercle, I consider it as of consequence to cure a catarrh as soon as possible after its first appearance: More especially, when it shall linger, and continue for some time, or shall, after some intermission, frequently return, the cure of it should be diligently attempted. The measures requisite for this purpose shall be mentioned afterwards, when we come to treat of catarrh as a primary disease; but, in the mean time, the means necessary for preventing its producing a phthisis shall be mentioned immediately, as they are the same with those I shall point out as necessary for preventing a phthisis from tubercles.

DCCCCIV. The preventing of a phthisis from asthma must be, by curing, if possible, the asthma, or at least by moderating it as much as may be done; and as it is

probable that asthma occasions phthisis, by producing tubercles, the measures necessary for preventing phthisis from asthma, will be the same with those necessary in the case of tubercles, which I am now about to mention.

DCCCV. I consider tubercles as by much the most frequent cause of phthisis ; and, even in many cases where this seems to depend upon hemoptysis, catarrh, or asthma, it does, however, truly arise from tubercles. It is upon this subject, therefore, that I shall have occasion to treat of the measures most commonly requisite for curing phthisis.

DCCCVI. When, in a person born of phthisical parents, of a phthisical habit, at the phthisical period of life, the symptoms (DCCCLXXXIX.) in the spring, or beginning of summer, shall appear in the slightest degree, we may presume that a tubercle, or tubercles, either have been formed, or are forming in the lungs ; and, therefore, that every means we can devise for preventing their formation, or for procuring their resolution, should be employed immediately, even although the patient himself should overlook or neglect the symptoms, as imputing them to accidental cold.

DCCCVII. This is certainly the general indication ; but how it may be executed, I cannot readily say. I do not know that, at any time, physicians have proposed any remedy capable of preventing the formation of tubercles, or of resolving them when formed. The analogy of scrophula gives no assistance in this matter. In scrophula, the remedies that are seemingly of most power, are sea-water, or certain mineral waters ; but these have generally proved hurtful in the case of tubercles of the lungs. I have known several instances of mercury very fully employed for certain diseases, in persons who were supposed at the time to have tubercles formed, or forming, in their lungs ; but though the mercury proved a cure for those other diseases, it was of no service in preventing phthisis, and in some cases seemed to hurry it on.

DCCCVIII. Such appears to me to be the present state of our art, with respect to the cure of tubercles ; but I

do not despair of a remedy for the purpose being found hereafter. In the mean time, all that at present seems to be within the reach of our art, is to take the measures proper for avoiding the inflammation of tubercles. It is probable, that tubercles may subsist long without producing any disorder ; and I am disposed to think, that nature sometimes resolves and discusses tubercles which have been formed ; but that nature does this only when the tubercles remain in an uninflamed state ; and, therefore, that the measures necessary to be taken, are chiefly those for avoiding the inflammation of the tubercles.

DCCCCIX. The inflammation of a tubercle of the lungs is to be avoided upon the general plan of avoiding inflammation, by blood-letting, and by an antiphlogistic regimen ; the chief part of which, in this case, is the use of a low diet. This supposes a total abstinence from animal food, and the using of vegetable food almost alone ; but it has been found, that it is not necessary for the patient to be confined to vegetables of the weakest nourishment, it being sufficient that the farinacea be employed, and, together with these, milk*.

* The method here recommended of averting impending phthisis, by confining those who are threatened with it to a low diet, has of late been much controverted ; and many cases are adduced, where an opposite plan seems to have been attended with the best effects. Indeed, it appears at first sight rather extraordinary, that we should endeavor to combat the progress of a disease by such means as are calculated to increase that debility with which it is so intimately connected. Dr. Beddoes, in his very interesting work on Consumption, from a comparative survey of the classes of mankind most subject to phthisis, has ascertained, that those who consume most animal food, are in general far less subject to this disease. It has likewise been observed, that where children are fed on vegetables, scrophulous affections are prevalent. The apprehension of exciting inflammation of the tubercles, seems, except in particular cases, to be groundless. The inactive nature of scrophulous tumors, which analogy would lead us to suspect, are of a similar nature with those formed in the lungs ; and their being apparently connected with a debilitated action of the lymphatics, indicate the propriety of a *tonic* plan in phthisis. Dr. Beddoes has the following pertinent remarks : " In the preceding cases, I not only permitted, but enjoined a full diet. It gave me the greatest satisfaction to hear from my patients, that they relished animal food twice in the day, or once in the day, and once in the night. The principle upon which I have advised this regimen is simple. Since digitalis succeeds worst with the puny and the necessitous, and best with the robust and the well fed, I conceived that a generous diet, by bringing the constitution towards the most favorable state, would give the greatest chance of recovery. I supposed also, that simply tubercular

DCCCX. Milk has been generally considered as the chief remedy in phthisis, and in the case of every tendency to it ; but whether from its peculiar qualities, or from its being of a lower quality, with respect to nourishment, than any food entirely animal, is not certainly determined. The choice and administration of milk will be properly directed, by considering the nature of the milk of the several animals from which it may be taken, and the particular state of the patient with respect to the period and circumstances of the disease, and to the habits of his stomach with respect to milk.

DCCCXI. A second means of preventing the inflammation of the tubercles of the lungs, is, by avoining any particular irritation of the affected part, which may arise from any violent exercise of respiration ; from any considerable degree of bodily exercise ; from any position of the body which straitens the capacity of the thorax ; and, lastly, from cold applied to the surface of the body, which determines the blood in greater quantity to the internal parts, and particularly to the lungs.

DCCCXII. From the last mentioned confideration, the application of cold in general, and, therefore, the winter season, in cold climates, as diminishing the cutaneous perspiration, is to be avoided ; but more particularly that application of cold is to be shunned that may suppress perspiration, to the degree of occasioning a catarrh, which consists in an inflammatory determination to the lungs, and many, therefore, most certainly produce an inflammation of the tubercles there.

" ed, and tuberculo-ulcerated lungs, are in a condition onalagous to other
 " parts affected with scrophula. As to the precautions which we find re-
 " commended on account of the structure and situation of the lungs, experi-
 " ence seems to me to show that they are highly exaq uated at least, if not al-
 " together chimerical. In addition to animal food, I often allowed fermen-
 " ted liquors, but under certain limitations. If any particular fermented
 " liquors, but under certain limitations. If any particular fermented liquor,
 " or if all kinds produced coughing and heat of the skin, they were prohib-
 " ited. I also recommended wine (or wine and water,) at any time rather
 " than after a full meal. A full meal generally produces constitutional ac-
 " tion enough, or more than enough ; in which latter case, the quantity of
 " food taken at one time should be diminished. In the fore part of the day,
 " langor and coldness will often occur, especially where an invalid fasts too
 " long, and then vinous liquor may be taken with advantage." See Beddoes
 on the Medical Management of the Consumptive, p. 155 ; likewise Peat's
 Cases of Phthisis.

By considering, that the avoiding heat is a part of the antiphlogistic regimen above recommended, and by comparing this with what has been just now said respecting the avoiding cold, the proper choice of climates and seasons for phthisical patients will be readily understood.

DCCCCXIII. A third means of avoiding the inflammation of the tubercles of the lungs, consists in diminishing the determination of the blood to the lungs, by supporting and increasing the determination to the surface of the body, which is to be chiefly and most safely done by warm clothing*, and the frequent use of the exercises of gestation.

* The erroneous notions which have till of late prevailed, respecting the effects of the warm bath, have prevented us from deriving any assistance from this powerful remedy. Dr. Marcard has however ascertained, that, instead of debilitating, its effects are highly tonic, and that it may be ranked amongst the most permanent and salutary *stimuli*. The experiments of others have confirmed the accuracy of his observations, and it bids fair for being soon generally resorted to with this intention, in spite of the inveterate prejudices which it has had to encounter. It is rather surprising, that the well known frequency of baths amongst the ancients, did not sooner lead to the suspicion of its being less debilitating than had been imagined. False medical theory, however, combined with popular prejudice to oppose its introduction. Its effects on dead matter were, by a false analogy, transferred to the living system. Hence proceeded the idea of its *relaxing*, *unbracing*, &c. More recent doctrines had likewise tended to confirm these vague notions, by giving them a form which was more definite, though not much more satisfactory. Heat is a stimulus, and must, according to its intensity, exhaust the excitability —is their language; a language which by no means applies to the effects produced on such a complicated machine as the animal body; where one action often introduces a series, the ultimate consequences of which we cannot always predict.

The effects of this remedy in invigorating the system, and determining to the surface, by supporting the action of the cutaneous vessels, render it of high importance in incipient phthisis. Dr. Beddoes mentions, that his "own experience of the blood-warm bath, extends to a considerable number of cases, particularly of persons, who, from the loss of relations by consumption, with obscure, but alarming feelings of indisposition, or with some of the more evident symptoms dreaded an attack of this disease. Sensible benefit was received by most; permanent benefit by several; injury by none. The reduction of the pulse, during the time of immersion, was perfectly ascertained in a number of instances; and the strengthening effect of the bath was sometimes so apparent, that several of those whom I desired to bathe every other day, have assured me, that on the day of bathing, they felt capable of greater exertion than on the following or preceding day." The temperature of the bath should not exceed that of the body nor fall much below 90°; as between these it is found most effectual. It should always however be accommodated to the patient's feelings. The safest time of immersion is between breakfast and dinner; and they should continue in the bath from a quarter of an hour to an hour, according as they find it agreeable.

DCCCCXIV. Every mode of gestation has been found of use in phthisical cases ; but riding on horseback, as being accompanied with a great deal of bodily exercise, is less safe in persons liable to an hemoptysis. Travelling in a carriage, unless upon very smooth roads, may also be of doubtful effect ; and all the modes of gestation that are employed on land, may fall short of the effects expected from them, because they cannot be rendered sufficiently constant ; and therefore it is, that sailing, of all other modes of gestation, is the most effectual in pneumonic cases, as being both the smoothest and most constant.

It has been imagined, that some benefit is derived from the state of the atmosphere upon the sea ; but I cannot find that any impregnation of this which can be supposed to take place, can be of service to phthisical persons. It is, however, probable, that frequently some benefit may be derived from the more moderate temperature and greater purity of the air upon the sea.

DCCCCXV. In order to take off any inflammatory determination of the blood into the vessels of the lungs, blisters applied to some part of the thorax may often be of service ; and, for the same purpose as well as for moderating the general inflammatory state of the body, issues of various kinds may be employed with advantage.

DCCCCXVI. The several measures to be pursued in the case of what is properly called an Incipient phthisis, have now been mentioned ; but they have seldom been employed in such cases in due time, and have, therefore, perhaps, seldom proved effectual. It has more commonly happened, that, after some time, an inflammation has come upon the tubercle, and an abscess has been formed which opening into the cavity of the bronchiae, has produced an ulcer, and a confirmed phthisis.

DCCCCXVII. In this state of matters, some new indications, different from the former, may be supposed to arise ; and indications for preventing absorption, for preventing the effects of the absorbed matter upon the blood, and for healing the ulcer, have been actually proposed. I cannot find, however, that any of the means proposed

for executing these indications, are either probable, or have proved effectual. If, upon some occasions, they have appeared to be useful, it has been probably by answering some other intention.

While no antidote against the poison which especially operates here, seems to have been as yet found out, it appears to me that too great a degree of inflammation has a great share in preventing the healing of the ulcer which occurs ; and such inflammation is certainly what has a great share in urging on its fatal consequences. The only practice, therefore, which I can venture to propose, is the same in the ulcerated as in the crude state of a tubercle ; that is, the employment of means for moderating inflammation, which have been already mentioned (DCCCCIX. *et seq.*)

DCCCCXVIII. The balsamics, whether natural or artificial, which have been so commonly advised in cases of phthisis, appear to me to have been proposed upon no sufficient grounds, and to have proved commonly hurtful. The resinous and acrid substance of myrrh, lately recommended, has not appeared to me to be of any service, and in some cases to have proved hurtful.

DCCCCXIX. Mercury, so often useful in healing ulcers, has been speciously enough proposed in this disease, but whether that it be not adapted to the particular nature of the ulcers of the lungs occurring in phthisis, or that it proved hurtful because it cannot have effect, without exciting such an inflammatory state of the whole system, as, in a hectic state, must prove very hurtful, I cannot determine. Upon many trials which I have seen made, it has proved of no service, and commonly has appeared to be manifestly pernicious.

DCCCCXX. The Peruvian bark has been recommended for several purposes in phthisical cases ; and is said, upon some occasions, to have been useful ; but I have seldom found it to be so : and as by its tonic power it increases the phlogistic diathesis of the system, I have frequently found it hurtful. In some cases, where the morning remissions of the fever were considerable, and the noon exacerbations well marked, I have observed the Peruvian

bark given in large quantities with the effect of stopping these exacerbations, and at the same time of relieving the whole of the phthisical symptoms : but in the cases in which I observed this, the fever showed a constant tendency to recur ; and at length the phthisical symptoms also returned, and proved quickly fatal.

DCCCCXXI. Acids of all kinds, as antiseptic and refrigerant, are useful in cases of phthisis ; but the native acid of vegetables is more useful than the fossil acids, as it can be given in much larger quantities, and may also be given more safely than vinegar, being less liable to excite coughing.

DCCCCXXII. Though our art can do so little towards the cure of this disease, we must, however, palliate the uneasy symptoms of it as well as we can. The symptoms especially urgent, are the cough and diarrhoea. The cough may be in some measure relieved by demulcents (DCCCLXXIII.), but the relief obtained by these is imperfect and transitory, and very often the stomach is disturbed by the quantity of oily, mucilaginous, and sweet substances, which are on these occasions taken into it.

DCCCCXXIII. The only certain means of relieving the cough, is by employing opiates. These indeed certainly increase the phlogistic diathesis of the system ; but commonly they do not so much harm in this way, as they do service by quieting the cough, and giving sleep. They are supposed to be hurtful by checking expectoration ; but they do it for a short time only ; and after a sound sleep, the expectoration in the morning is more easy than usual. In the advanced state of the disease, opiates seem to increase the sweatings that occur ; but they compensate this by the ease they afford in a disease which cannot be cured.

DCCCCXXIV. The diarrhoea which happens in the advanced state of this disease, is to be palliated by moderate astringents, mucilages, and opiates.

Rhubarb, so commonly prescribed in every diarrhoea, and all other purgatives, are extremely pernicious in the colliquative diarrhoea of hecticics.

Fresh subacid fruits, supposed to be always laxative, are often, in the diarrhoea of hectic, by their antiseptic quality, very useful*.

* The fatal prevalence of this ruinous disease, against whose extensive ravages the powers of medicine have for ages been opposed in vain, has at length roused medical men to exertions, which have been so far successful, as to detect in *Digitalis* a medicine which promises something more than a glimpse of hope in this hitherto incurable distemper. Those who have been most zealous in extolling this remedy in consumption, have perhaps been too sanguine in their expectations ; and, as usual, from their laudable enthusiasm, excited by the hopes of discovering an antidote against such a direful scourge, have over-rated its value ; while, on the other hand, many, who, from indolence or incapacity, are determined opposers of all innovation on the established routine, have run into the contrary extreme ; so that, among such diversity of opinion, it is no easy matter to appreciate fairly its effects. It appears, however, from numerous well authenticated cases, from medical men of the first eminence in their profession, that digitalis is possessed of strong anti-phthisical powers ; that in many instances, where the symptoms evidently denoted the existence of ulcerated tubercles, it performed a cure ; and that in the early stages of this complaint, it frequently arrests its progress. Like other active remedies, it operates powerfully on the animal machine, and has sometimes, from its indiscreet use, been attended with alarming consequences, which have deterred others from having recourse to it. Its administration is now, however, better understood : and when employed with due precaution, little or nothing is to be apprehended from its deleterious qualities. The preparation of digitalis, which is generally preferred, as being both more certain in its operation, and of more decided efficacy in consumption, is the saturated tincture. It is prepared, by digesting, with a gentle heat, one ounce of the dried leaves, with eight ounces of proof spirit, for six or seven days. The tincture, when properly prepared, is of a dark green color. We may begin with ten drops of this to an adult, three times a day ; gradually increasing the dose, according to the effects produced. When it produces a speedy diminution of the hardness and frequency of the pulse, without inducing nausea, vomiting, vertigo, or any disagreeable consequences, much advantage is to be expected from persisting in its use. When, however, these unpleasant symptoms supervene, its exhibition should be immediately discontinued, and again renewed, after they have been subdued. It is however to be observed, that, when employed without interruption, more benefit is derived from it, than when its exhibition is occasionally suspended and resumed. When it has been attended with success, it should be continued for a month or more, after the disappearance of the complaint, that there may be less danger of a relapse.

Much ingenious speculation has been employed in attempting to explain the *modus operandi* of this medicine : we have as yet, however, nothing better than conjecture on this point. Dr. Drake supposes, that it produces its salutary effects in phthisis, by promoting absorption so rapidly from the ulcerated surface, as to prevent its combining with oxygen, and the consequent generation of an ichorous poison ; while the motion of the heart and arteries is so retarded, as to diminish that irritating and morbid action of the extremities of the blood vessels, which keeps up the secretion of purulent matter. (*See Beddoe's Contributions.*) Though there is no contradiction in supposing that a substance may increase the action of one set of vessels, and weaken the activity of another ; yet as this opinion is supported by no analogy (except we admit the doctrine of *reverse sympathy*, as ingeniously stated by Dr. Darwin), it appears rather improbable. But although the action of the absorbent vessels is not increased, if from the effects of digitalis on the

C H A P. V.

OF THE HEMORRHOIS*, OR, OF THE HEMORRHOIDAL SWELLING AND FLUX.

SECT. I. *Of the Phenomena and Causes of the Hemorrhois.*

DCCCCXXV. A DISCHARGE of blood from small tumors on the verge of the anus, is the symptom which generally constitutes the Hemorrhois ; or, as it is vulgarly called, the Hemorrhoidal Flux. But a discharge of blood from within the anus, when the blood is of a florid color, showing it to have come from no great distance is also considered as the same disease ; and physicians have agreed in making two cases or varieties of it, under the names of External and Internal Hemorrhois.

DCCCCXXVI. In both cases it is supposed, that the flow of blood is from tumors previously formed, which are named Hemorrhoids, or Piles ; and it frequently happens, that the tumors exist without any discharge of blood ; in which case, however, they are supposed to be a part of the same disease, and are named Hemorrhoides Cæcæ, or Blind Piles.

DCCCCXXVII. These tumors, as they appear without the anus, are sometimes separate, round, and prominent, on the verge of the anus ; but frequently the tu-

arterial system, secretion is diminished, the effect will be the same. We are by no means to imagine, that the retardation of the pulse proceeds from the sedative power of digitalis, since the pulsations become more full and powerful : what they lose in frequency, they gain in strength, as they move through a greater area at each stroke. So far digitalis is on a footing with substances confessedly stimulant, in lowering morbid frequency of pulse ; but the effect which it has in reducing it below the natural standard, does not so easily admit of an explanation on these grounds. We cannot explain the action of digitalis, by considering it as differing only in degree from other stimulants : it indeed, in many respects, resembles opium ; but it likewise appears to exert an action *sui generis*, which our present limited knowledge of the animal economy does not enable us to unfold.

*A pain or heaviness of the head ; vertigo ; pain in the loins ; pain of the anus ; livid and painful swellings about the anus, from which blood generally flows, which sometimes, without any apparent tumor, comes from the anus. *Syn. Nef.*

mor is only one tumid ring, forming, as it were, the anus pushed without the body.

DCCCCXXVIII. These tumors, and the discharge of blood from them, sometimes come on as an affection purely topical, and without any previous disorder in other parts of the body : but it frequently happens, even before the tumors are formed, and more especially before the blood flows, that various disorders are felt in different parts of the body, as headach, vertigo, stupor, difficulty of breathing, sickness, colic-pains, pain of the back and loins ; and often, together with more or fewer of these symptoms, there occurs a considerable degree of pyrexia.

The coming on of the disease with these symptoms, is usually attended with a sense of fullness, heat, itching, and pain in and about the anus.

Sometimes the disease is preceded by a discharge of serous matter from the anus : and sometimes this serous discharge, accompanied with some swelling, seems to be in place of the discharge of blood, and to relieve those disorders of the system which we have mentioned. This serous discharge, therefore, has been named the Hemorrhoidis Alba.

DCCCCXXIX. In the hemorrhoidis the quantity of blood discharged is different upon different occasions. Sometimes the blood flows only upon the person's going to stool ; and commonly, in larger or lesser quantity, follows the discharge of the fæces. In other cases, the blood flows without any discharge of fæces ; and then, generally, it is after having been preceded by the disorders above mentioned, when it is also commonly in larger quantity. This discharge of blood is often very considerable ; and by the repetition, it is often so great, as we could hardly suppose the body to bear but with the hazard of life. Indeed, though rarely, it has been so great as to prove suddenly fatal. These considerable discharges occur especially to persons who have been frequently liable to the disease. They often induce great debility ; and frequently a leucophlegmatia, or dropsy, which proves fatal.

The tumors and discharges of blood in this disease, often recur at exactly stated periods.

DCCCCXXX. It often happens, in the decline of life, that the hemorrhoidal flux, formerly frequent, ceases to flow; and, upon that event, it generally happens that the persons are affected with apoplexy or palsey.

DCCCCXXXI. Sometimes hemorrhoidal tumors are affected with considerable inflammation, which, ending in suppuration, gives occasion to the formation of fistulous ulcers in those parts.

DCCCCXXXII. The hemorrhoidal tumors have been often considered as varicous tumors, or dilatations of veins; and it is true, that in some cases varicous dilatations have appeared upon dissection. These however do not always appear; and I presume it is not the ordinary case, but that the tumors are formed by an effusion of blood into the cellular texture of the intestine near to its extremity. These tumors, especially when recently formed, frequently contain fluid blood; but, after they have remained for some time, they are commonly of a firmer substance.

DCCCCXXXIII. From a consideration of their causes, to be hereafter mentioned, it is sufficiently probable, that hemorrhoidal tumors are produced by some interruption of the free return of blood from the veins of the lower extremity of the rectum; and it is possible, that a considerable accumulation of blood in these veins may occasion a rupture of their extremities, and thus produce the hemorrhagy or tumors I have mentioned. But, considering that the hemorrhagy occurring here, is often preceded by pain, inflammation, and a febrile state, as well as by many other symptoms which show a connection between the topical affection and the state of the whole system, it seems probable that the interruption of the venous blood, which we have supposed to take place, operates in the manner explained in DCCLXIX.; and therefore; that the discharge of blood here is commonly from arteries.

DCCCCXXXIV. Some physicians have been of opinion, that a difference in the nature of the hemorrois, and

of its effects upon the system, might arise from the difference of the hemorrhoidal vessels from which the blood issued. But it appears to me, that hardly in any case we can distinguish the vessels from which the blood flows ; and that the frequent insculpations of both the arteries and veins which belong to the lower extremity of the rectum, will render the effects of the hemorrhagy nearly the same, from whichever of these vessels the blood proceed.

DCCCCXXXV. In DCCLXIX. I have endeavored to explain the manner in which a certain state of the sanguiferous system might give occasion to an hemorrhoidal flux ; and I have no doubt that this flux may be produced in that manner. I cannot, however, by any means admit that the disease is so often produced in that manner, or that on its first appearance, it is so frequently a systematic affection, as the Stahlians have imagined, and would have us to believe. It occurs in many persons before the period of life at which the venous plethora takes place ; it happens to females, in whom a venous plethora, determined to the hemorrhoidal vessels, cannot be supposed ; and it happens to both sexes, and to persons of all ages, from causes which do not affect the system, and are manifestly suited to produce a topical affection only.

DCCCCXXXVI. These causes of a topical affection are, in the first place, the frequent voiding of hard and bulky fæces, which, not only by their long stagnation in the rectum, but especially when voided, must press upon the veins of the anus, and interrupt the course of the blood in them. It is for this reason that the disease happens so often to persons of a slow and bound belly.

DCCCCXXXVII. From the causes just now mentioned, the disease happens especially to persons liable to some degree of a prolapsus ani. Almost every person in voiding fæces has the internal coat of the rectum more or less protruded without the body ; and this will be to a greater or lesser degree, according as the hardness and bulk of the fæces occasion a greater or lesser effort or pressure upon the anus. While the gut is thus pushed out, it often happens that the sphincter ani is contracted before

the gut is replaced ; and in consequence thereof, a strong constriction is made, which preventing the fallen-out gut from being replaced, and at the same time preventing the return of blood from it, occasions its being considerably swelled, and its forming a tumid ring round the anus.

DCCCCXXXVIII. Upon the sphincter's being a little relaxed, as it is immediately after its strong contraction, the fallen-out portion of the gut is commonly again taken within the body ; but by the frequent repetition of such an accident, the size and fullness of the ring formed by the fallen-out gut, is much increased. It is therefore more slowly and difficultly replaced ; and in this consists the chief uneasiness of hemorrhoidal persons.

DCCCCXXXIX. As the internal edge of the ring mentioned, is necessarily divided by clefts, the whole often assumes the appearance of a number of distinct swellings ; and it also frequently happens that some portions of it more considerably swelled than others, become more protuberant, and form those small tumors more strictly called Hemorrhoids, or piles.

DCCCCXL. From considering that the pressure of fæces, and other causes interrupting the return of venous blood from the lower extremity of the rectum, may operate a good deal higher up in the gut than that extremity, it may be easily understood that tumors may be formed within the anus ; and probably it also happens, that some of the tumors formed without the anus, as in DCCCCXXXIX. may continue when taken within the body, and even be increased by the causes just now mentioned. It is thus that I would explain the production of internal piles, which, on account of their situation and bulk, are not protruded on the person's going to stool, and are often therefore more painful. The same internal piles are more especially painful, when affected by the hemorrhagic effort described in DCCXLV. DCCLXIX.

DCCCCXLI. The production of piles is particularly illustrated by this, that pregnant women are frequently affected with them. This is to be accounted for, partly from the pressure of the uterus upon the rectum, and

partly from the costive habit to which pregnant women are usually liable. I have known many instances of piles occurring for the first time during the state of pregnancy ; and there are few women that have born children who are afterwards entirely free from piles. The Stahlians have commonly asserted, that the male sex is more frequently affected with this disease than the female ; but in this country I have constantly found it otherwise.

DCCCCXLII. It is commonly supposed, that the frequent use of purgatives, especially of those of the more acrid kind, and more particularly of aloetics, is apt to produce the hemorrhoidal affection ; and as these purgatives stimulate chiefly the great guts, it seems sufficiently probable that they may excite this disease.

DCCCCXLIII. I have now mentioned several causes which may produce the hemorrhoidal tumors and flux as a topical affection only ; but must observe farther, that although the disease appears first as a purely topical affection, it may, by frequent repetition, become habitual, and therefore may become connected with the whole system, in the manner already explained, with respect to hemorrhagy in general, in DCCXLVIII.

DCCCCXLIV. The doctrine now referred to, will, it is apprehended, apply very fully to the case of the hemorrhoidal flux ; and will the more readily apply, from the person who has been once affected being much exposed to a renewal of the causes which first occasioned the disease ; and from many persons being much exposed to a congestion in the hemorrhoidal vessels, in consequence of their being often in an erect position of the body, and in an exercise which pushes the blood into the depending vessels, while at the same time the effects of these circumstances are much favored by the abundance and laxity of the cellular texture about the rectum.

DCCCCXLV. It is thus that the hemorrhoidal flux is so often artificially rendered an habitual and systematic affection : and I am persuaded, that it is this which has given occasion to the Stahlians to consider the disease as almost universally such.

DCCCCXLVI. It is to be particularly observed here that when the hemorrhoidal disease has either been originally, or has become in the manner just now explained, a systematic affection, it then acquires a particular connection with the stomach, so that certain affections there excite the hemorrhoidal disease, and certain states of the hemorrhoidal affection excite disorders of the stomach.

It is perhaps owing to this connection, that the gout sometimes affects the rectum. See DXXV.

SECT. II. *Of the Cure of Hemorrhoidal Affections.*

DCCCCXLVII. Almost at all times it has been an opinion amongst physicians, and from them spread amongst the people, that the hemorrhoidal flux is a salutary evacuation, which prevents many diseases that would otherwise have happened ; and that it even contributes to give long life. This opinion, in later times, has been especially maintained by Dr. Stahl, and his followers ; and has had a great deal of influence upon the practice of physic in Germany.

DCCCCXLVIII. The question arises with respect to hemorrhagy in general, and indeed it has been extended so far by the Stahlians. I have accordingly considered it as a general question (DCCLXVII.—DCCLXXX.) but it has been more especially agitated with regard to the disease now under our consideration : And as to this, although I am clearly of opinion, that the hemorrhoid may take place in consequence of the general state of the system (DCCLXIX.) or, what is still more frequent that by repetition it may become connected with that general state (DCCCCXLIII.) and in either case cannot be suppressed without great caution ; I must beg leave, notwithstanding this, to maintain, that the first is a rare case, that generally the disease first appears as an affection purely topical (DCCCCXXXV.—DCCCCXLII.), and that the allowing it to become habitual is never proper. It is a nasty disagreeable disease, ready to go to excess, and to be thereby very hurtful, as well as sometimes fatal. At best it is liable to accidents, and thereby to unhappy consequences. I am therefore of opinion, that not only the

first approaches of the disease are to be guarded against, but even that when it has taken place for some time, from whatever cause it may have proceeded, the flux is always to be moderated, and the necessity of it, if possible, superseded.

DCCCCXLIX. Having delivered these general rules, I proceed to mention more particularly how the disease is to be treated, according to the different circumstances under which it may appear.

When we can manifestly discern the first appearance of the disease to arise from causes acting upon the part only, the strictest attention should be employed in guarding against the renewal of these causes.

DCCCCL. One of the most frequent of the remote causes of the hemorrhoidal affection, is a slow and bound belly (DCCCCXXXVI.) : and this is to be constantly obviated by a proper diet, which each individual's own experience must direct ; or, if the management of diet be not effectual, the belly must be kept regular by such medicines as may prove gently laxative, without irritating the rectum. In most cases it will be of advantage to acquire a habit with respect to time, and to observe it exactly.

DCCCCLI. Another cause of hemorrhoids to be especially attended to, is the prolapsus or protrusion of the anus, which is apt to happen on a person's having a stool (DCCCCXXXVII.) If it shall occur to any considerable degree, and at the same time be not easily and immediately replaced, it most certainly produces piles, or increases them when otherwise produced. Persons therefore liable to this prolapsus, should, upon their having been at stool, take great pains to have the gut immediately replaced, by lying down in a horizontal posture, and pressing gently upon the anus, till the reduction shall be completely obtained.

DCCCCLII. When the prolapsus of which I speak, is occasioned only by voiding hard and bulky faeces, it should be obviated by the means mentioned in DCCCCL, and may be thereby avoided. But in some persons it is owing to a laxity of the rectum ; in which case it is often most

considerable upon occasion of a loose stool : and then the disease is to be treated by astringents, as well as by proper artifices for preventing the falling down of the gut.

DCCCCLIII. These are the means to be employed upon the first approaches of the hemorrhoidal affection ; and when from neglect it shall have frequently recurred, and has become in some measure established, they are no less proper. In the latter case, however, some other means are also necessary. It is particularly proper to guard against a plethoric state of the body ; consequently to avoid a sedentary life, a full diet, and particularly intemperance in the use of strong liquor, which, as I should have observed before, is, in all cases of hemorrhagy, of the greatest influence in increasing the disposition to the disease.

DCCCCLIV. I need hardly repeat here, that exercise of all kinds must be a chief means of obviating and removing a plethoric state of the body ; but upon occasion of the hemorrhoidal flux immediately approaching, both walking and riding, as increasing the determination of the blood into the hemorrhoidal vessels, are to be avoided. At other times, when no such determination has been already formed, those modes of exercise may be very properly employed.

DCCCCLV. Cold bathing is another remedy that may be employed to obviate plethora, and prevent hemorrhagy ; but it is to be used with caution. When the hemorrhoidal flux is approaching, it may be dangerous to turn it suddenly aside by cold bathing : but during the intervals of the disease, this remedy may be employed with advantage ; and in persons liable to a prolapsus ani, the frequent washing of the anus with cold water may be very useful.

DCCCCLVI. These are the means for preventing the recurrence of the hemorrhoidal flux ; and in all cases, when it is not immediately approaching, they are to be employed. When it has actually come on, means are to be employed for moderating it as much as possible, by the person's lying in a horizontal position upon a hard bed ; by avoiding exercise in an erect posture ; by us-

ing a cool diet ; by avoiding external heat ; and by obviating the irritation of hardened faeces by the use of proper laxatives (DCCCCL.) From what has been said above, as to the being careful not to increase the determination of the blood into the hemorrhoidal vessels, the propriety of these measures must sufficiently appear ; and if they were not so generally neglected, many persons would escape the great trouble, and the various bad consequences which so frequently result from this disease.

DCCCCLVII. With respect to the further cure of this disease, it is almost in two cases only that hemorrhoidal persons call for the assistance of the physician. The one is when the affection is accompanied with much pain ; and of this there are two cases, according as the pain happens to attend the external or the internal piles.

DCCCCLVIII. The pain of the external piles arises especially when a considerable protrusion of the rectum has happened ; and when, continuing unreduced, it is strangled by the constriction of the sphincter ; while at the same time no bleeding happens, to take off the swelling of the protruded portion of the intestine. Sometimes an inflammation supervenes, and greatly aggravates the pain. To relieve the pain in this case, emollient fomentations and poultices are sometimes of service ; but a more effectual relief is to be obtained by applying leeches to the tumid parts.

DCCCCLIX. The other case in which hemorrhoidal persons seek assistance, is that of excessive bleeding. Upon the opinion so generally received of this discharge being salutary, and from the observation, that upon the discharge occurring, persons have sometimes found relief from various disorders, the most part of persons liable to it are ready to let it go too far ; and indeed the Stahlians will not allow it to be a disease, unless when it has actually gone to excess. I am, however, well persuaded, that this flux ought always to be cured as soon as possible.

DCCCCLX. When the disease occurs as a purely topical affection, there can be no doubt of the propriety of

this rule ; and even when it has occurred as a critical discharge in the case of a particular disease, yet when this disease shall have been entirely cured and removed, the preventing any return of the hemorrhoid seems to be both safe and proper.

DCCCLXI. It is only when the disease arises from a plethoric state of the body, and from a stagnation of blood in the hypochondriac region, or when, though originally topical, the disease, by frequent repetition, has become habitual, and has thereby acquired a connection with the whole system, that any doubt can arise as to the safety of curing it entirely. Even in these cases, however, I apprehend it will be always proper to moderate the bleeding ; lest by its continuance or repetition, the plethoric state of the body, and the particular determination of the blood into the hemorrhoidal vessels be increased, and the recurrence of the disease, with all its inconveniences and danger, be too much favored.

DCCCLXII. Further, even in the cases stated (DCCCLXI.) in so far as the plethoric state of the body, and the tendency to that state can be obviated and removed, this is always to be diligently attempted ; and if it can be executed with success, the flux may be entirely suppressed.

DCCCLXIII. The Stahlian opinion, that the hemorrhoidal flux is only in excess when it occasions great debility, or a leucophlegmatia, is by no means just ; and it appears to me, that the smallest approach towards producing either of these, should be considered as an excess, which ought to be prevented from going farther.

DCCCLXIV. In all cases therefore of excess, or of any approach towards it, and particularly when the disease depends upon a prolapsus ani (DCCLI.), I am of opinion, that astringents, both internal and external, may be safely and properly employed ; not indeed to induce an immediate and total suppression, but to moderate the hemorrhagy, and by degrees to suppress it altogether, while at the same time measures are taken for removing the necessity of its recurrence.

DCCCCLXV. When the circumstances (DCCXI.VI.) marking a connection between the hemorrhoidal affection, and the state of the stomach occur, the measures necessary are the same as in the case of a tonic gout:

C H A P. VI.

OF THE MENORRHAGIA*, OR THE IMMODERATE FLOW OF THE MENSES.

DCCCCLXVI. BLOOD discharged from the vagina may proceed from different sources in the internal parts : but I here mean to treat of those discharges only, in which the blood may be presumed to flow from the same sources that the menses in their natural state proceed from ; and which discharges alone, are those properly comprehended under the present title. The title of *Metrorrhagia*, or *hemorrhagia uteri*, might comprehend a great deal more.

DCCCCLXVII. The menorrhagia may be considered as of two kinds ; either as it happens to pregnant and lying-in women, or as it happens to women neither pregnant nor having recently born children. The first kind, as connected with the circumstances of pregnancy and child bearing, (which are not to be treated of in the present course). I am not to consider here, but shall confine myself to the second kind of menorrhagia only.

DCCCCLXVIII. The flow of the menses is considered as immoderate, when it recurs more frequently, when it continues longer, or when during the ordinary continuance it is more abundant, than is usual with the same person at other times.

DCCCCLXIX. As the most part of women are liable to some inequality with respect to the period, the duration, and the quantity of their menses; so it is not every inequality in these respects that is to be considered as a disease ;

* Pain of the back, loins, and belly, similar to those which women laboring in childbed experience, attended with an unusual flow of the menses.
Syn. Nof.

but only those deviations, which are excessive in degree, which are permanent, and which induce a manifest state of debility.

DCCCCLXX. The circumstances (DCCCCLXVIII. DCCCCLIX.) are those which chiefly constitute the menorrhagia : but it is proper to observe, that although I allow the frequency, duration, and quantity of the menses to be judged of by what is usual with the same individual at other times ; yet there is, in these particulars, so much uniformity observable in the whole of the sex, that in any individual in whom there occurs a considerable deviation from the common measure, such a deviation, if constantly recurring, may be considered as at least approaching to a morbid state, and as requiring most of the precautions which I shall hereafter mention as necessary to be attended to by those who are actually in such a state.

DCCCCLXXI. However we may determine with respect to the circumstances DCCCCLXVIII. DCCCCLXIX. it must still be allowed, that the immoderate flow of the menses is especially to be determined by those symptoms affecting other functions of the body, which accompany and follow the discharge.

When a larger flow than usual of the menses has been preceded by headache, giddiness or dyspnœa, and has been ushered in by a cold stage, and is attended with much pain of the back and loins, with a frequent pulse, heat and thirst, it may then be considered as preternaturally large.

DCCCCLXXII. When, in consequence of the circumstances DCCCCLXVIII.—DCCCCLXXI. and the repetition of these, the face becomes pale ; the pulse grows weak ; an unusual debility is felt in exercise ; the breathing is hurried by moderate exercise ; when, also, the back becomes pained from any continuance in an erect posture ; when the extremities become frequently cold ; and when in the evening the feet appear affected with oedematous swelling ; we may from these symptoms certainly conclude, that the flow of the menses has been immoderate, and has already induced a dangerous state of debility.

DCCCCLXXIII. The debility thus induced, does often discover itself also by affectations of the stomach, as ano-

rexia and other symptoms of dyspepsia ; by a palpitation of the heart, and frequent faintings ; by a weakness of mind liable to strong emotions from flight causes, especially when suddenly presented.

DCCCCLXXIV. That flow of the menses, which is attended with barrenness in married women, may be generally considered as immoderate and morbid.

DCCCCLXXV. Generally, also, that flow of the menses may be considered as immoderate, which is preceded and followed by a leucorrhœa.

DCCCCLXXVI. I treat of menorrhagia here as an active hemorrhagy, because I consider menstruation, in its natural state, to be always of that kind : and although there should be cases of menorrhagia which might be considered as purely passive, it appears to me that they cannot be so properly treated of in any other place.

DCCCCLXXVII. The menorrhagia (DCCCCLXVIII. *et seq.*) has for its proximate cause, either the hemorrhagic effort of the uterine vessels preternaturally increased, or a preternatural laxity of the extremities of the uterine arteries, the hemorrhagic effort remaining as in the natural state.

DCCCCLXXVIII. The remote causes of the menorrhagia may be, 1st, Those which increase the plethoric state of the uterine vessels ; such as a full and nourishing diet, much strong liquor, and frequent intoxication. 2^{dly}, Those which determine the blood more copiously and forcibly into the uterine vessels ; as violent strainings of the whole body ; violent shocks of the whole body from falls ; violent strokes or contusions on the lower belly ; violent exercise, particularly in dancing ; and violent passions of the mind. 3^{dly}, Those which particularly irritate the vessels of the uterus ; as excess in venery ; the exercise of venery in the time of menstruation ; a costive habit, giving occasion to violent straining at stool ; and cold applied to the feet. 4^{thly}, Those which have forcibly overstrained the extremities of the uterine vessels ; as frequent abortions ; frequent childbearing without nursing ; and difficult tedious labors. Or, *lastly*, Those which induce a general laxity ; as living much in

warm chambers, and drinking much of warm enervating liquors, such as tea and coffee.

DCCCCLXXIX. The effects of the menorrhagia are pointed out in DCCCCLXXII. DCCCCLXXIII. where I have mentioned the several symptoms accompanying the disease ; and from these the consequences to be apprehended will also readily appear.

DCCCCLXXX. The treatment and cure of the menorrhagia must be different, according to the different causes of the disease.

In all cases, the first attention ought to be given to avoiding the remote causes, whenever that can be done ; and by that means the disease may be often entirely avoided.

When the remote causes cannot be avoided, or when the avoiding them has been neglected, and therefore a copious menstruation has come on, it should be moderated as much as possible, by abstaining from all exercise, either at the coming on or during the continuance of the menstruation ; by avoiding even an erect posture as much as possible ; by shunning external heat, and therefore warm chambers and soft beds ; by using a light and cool diet ; by taking cold drink, at least as far as former habits will allow ; by avoiding venery ; by obviating costiveness, or removing it by laxatives that give little stimulus.

The sex are commonly negligent, either in avoiding the remote causes, or in moderating the first beginnings of this disease. It is by such neglect that it so frequently becomes violent, and of difficult cure ; and the frequent repetition of a copious menstruation, may be considered as a cause of great laxity in the extreme vessels of the uterus.

DCCCCLXXXI. When the coming on of the menstruation has been preceded by some disorder in other parts of the body, and is accompanied with pains of the back, resembling parturient pains, together with febrile symptoms, and when at the same time the flow seems to be copious, then a bleeding at the arm may be proper, but it is not often necessary ; and it will in most cases be

sufficient to employ, with great attention and diligence, those means for moderating the discharge which have been mentioned in the last paragraph.

DCCCCLXXXII. When the immoderate flow of the menses shall seem to be owing to a laxity of the vessels of the uterus, as may be concluded from the general debility and laxity of the person's habit ; from the remote causes that have occasioned the disease (DCCCC-LXXVIII.) ; from the absence of the symptoms which denote increased action in the vessels of the uterus (DCCCC-LXXI.) ; from the frequent recurrence of the disease ; and particularly from this, that in the intervals of menstruation the person is liable to a leucorrhœa ; then in such case the disease is to be treated, not only by employing all the means mentioned in DCCCCLXXX. for moderating the hemorrhagy, but also by avoiding all irritation, every irritation having the greater effect in proportion as the vessels have been more lax and yielding. If in such a case of laxity, it shall appear that some degree of irritation concurs, opiates may be employed to moderate the discharge ; but in using these, much caution is requisite.

If, notwithstanding these measures having been taken, the discharge shall prove very large, astringents both external and internal may be employed. In such cases, may small doses of emetics be of service ?

DCCCCLXXXIII. When the menorrhagia depends on the laxity of the uterine vessels, it will be proper, in the intervals of menstruation, to employ tonic remedies ; as cold bathing and chalybeates. The exercises of gestation, also, may be very useful, both for strengthening the whole system, and for taking off the determination of the blood to the internal parts.

DCCCCLXXXIV. The remedies mentioned in these two last paragraphs, may be employed in all cases of menorrhagia, from whatever cause it may have proceeded, if the disease shall have already induced a considerable degree of debility in the body.

C H A P. VII.

OF THE LEUCORRHœA, FLOUR ALBUS, OR WHITES.

DCCCCLXXXV. Every serous or puriform discharge from the vagina, may be, and has been comprehended under one or other of the appellations I have prefixed to this chapter. Such discharges, however, may be various ; and may proceed from various sources, not yet well ascertained : but I confine myself here to treat of that discharge alone which may be presumed to proceed from the same vessels, which in their natural state, pour out the menses.

DCCCCLXXXVI. I conclude a discharge from the vagina to be of this kind ; 1. From its happening to women who are subject to an immoderate flow of the menses, and liable to this from causes weakening the vessels of the uterus. 2. From its appearing chiefly, and often only, a little before, as well as immediately after, the flow of the menses. 3. From the flow of the menses being diminished, in proportion as the leucorrhœa is increased. 4. From the leucorrhœa continuing after the menses have entirely ceased, and with some appearance of its observing a periodical recurrence. 5. From the leucorrhœa being accompanied with the effects of the menorrhagia (DCCCCLXXII. DCCCCLXXIII.) 6. From the discharge having been neither preceded by, nor accompanied with, symptoms of any topical affections of the uterus. 7. From the leucorrhœa not having appeared soon after communication with a person who might be suspected of communicating infection, and from the first appearance of the disease not being accompanied with any inflammatory affection of the pudenda.

DCCCCLXXXVII. The appearance of the matter discharged in the leucorrhœa, is very various with respect to consistence and color ; but from these appearances, it is not always possible to determine concerning its nature, or the particular source from whence it proceeds.

DCCCCLXXXVIII. The leucorrhœa, of which I am to treat, as ascertained by the several circumstances (DCCCCLXXXVI.) seems to proceed from the same causes as that species of menorrhagia which I suppose to arise from the laxity of the extreme vessels of the uterus. It accordingly often follows or accompanies such a menorrhagia; but though the leucorrhœa depends chiefly upon the laxity mentioned, it may have proceeded from irritations inducing that laxity, and seems to be always increased by any irritations applied to the uterus.

DCCCCLXXXIX. Some authors have alleged that a variety of circumstances in other parts of the body may have a share in bringing on and in continuing this affection of the uterus now under consideration: but I cannot discover the reality of those causes; and it seems to me, that this leucorrhœa, excepting in so far as it depends upon a general debility of the system, is always primarily an affection of the uterus; and the affections of other parts of the body which may happen to accompany it, are for the most part to be considered as effects, rather than as causes.

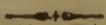
DCCCCXC. The effects of the leucorrhœa are much the same with those of menorrhagia; inducing a general debility, and, in particular, a debility in the functions of the stomach. If, however, the leucorrhœa be moderate, and be not accompanied with any considerable degree of menorrhagia, it may often continue long without inducing any great degree of debility, and it is only when the discharge has been very copious as well as constant, that its effects in that way are very remarkable.

DCCCCXCI. But, even when its effects upon the whole body are not very considerable, it may still be supposed to weaken the genital system; and it seems sufficiently probable that this discharge may often have a share in occasioning barrenness.

DCCCCXCII. The matter discharged in the leucorrhœa, is at first generally mild: but after some continuance of the disease, it sometimes becomes acrid; and by irritating, or perhaps eroding the surfaces over which it passes, induces various painful disorders..

DCCCCXCIII. As I have supposed that the leucorrhœa proceeds from the same causes as that species of menorrhagia which is chiefly, owing to a laxity of the uterine vessels, it must be treated, and the cure attempted, by the same means as delivered in DCCCCLXXXII. for the cure of menorrhagia, and with less reserve in respect of the use of astringents.

DCCCCXCIV. As the leucorrhœa generally depends upon a great loss of tone in the vessels of the uterus, the disease has been relieved, and sometimes cured, by certain stimulant medicines, which are commonly determined to the urinary passages, and from the vicinity of these are often communicated to the uterus. Such, for example, are cantharides, turpentine, and other balsams of a similar nature.



C H A P. VIII.

OF THE AMENORRHOEA*, OR INTERRUPTION OF THE MENSTRUAL FLUX.

DCCCCXCV. WHATEVER, in a system of methodical nosology, may be the fittest place for the amenorrhœa, it cannot be improper to treat of it here as an object of practice, immediately after having considered the menorrhagia.

DCCCCXCVI. The interruption of the menstrual flux is to be considered as of two different kinds ; the one being when the menses do not begin to flow at that period of life at which they usually appear ; and the other being that when, after they have repeatedly taken place for some time, they do, from other causes than conception, cease to return at their usual periods : The

* Gen. Either a complete stoppage, or unusually scanty discharge of the menses in women who are not pregnant.

Species 1. Amenorrhœa (*retention of the menses*) in young women who have passed the age when the menses used to appear, and who are troubled with various diseased affections.

Species 2. Amenorrhœa (*suppression of the menses*) in adults, whose menses after having flowed regularly, are suppressed. *Syn. Nos.*

former of these cases is named the *retention*, and the latter the *suppression* of the menses.

DCCCCXCVII. As the flowing of the menses depends upon the force of the uterine arteries impelling the blood into their extremities, and opening these so as to pour out red blood, so the interruption of the menstrual flux must depend, either upon the want of due force in the action of the uterine arteries, or upon some preternatural resistance in their extremities. The former I suppose to be the most usual cause of retention, the latter the most common cause of suppression ; and of each of these I shall now treat more particularly.

DCCCCXCVIII. The retention of the menses, the *eman-sio mensium* of Latin writers, is not to be considered as a disease merely from the menses not flowing at that period which is usual with most other women. This period is so different in different women, that no time can be precisely assigned as proper to the sex in general. In this climate, the menses usually appear about the age of fourteen ; but in many they appear more early, and in many not till the sixteenth year : in which last case it is often without any disorder being thereby occasioned. It is not therefore from the age of the person, that the retention is to be considered as a disease ; and it is only to be considered as such, when, about the time the menses usually appear, some disorders arise in other parts of the body which may be imputed to their retention ; being such as, when arising at this period, are known from experience to be removed by the flowing of the menses.

DCCCCXCIX. These disorders are, a sluggishness, and frequent sense of lassitude and debility, with various symptoms of dyspepsia ; and sometimes with a preternatural appetite. At the same time the face loses its vivid color, becomes pale, and sometimes of a yellowish hue ; the whole body becomes pale and flaccid ; and the feet, and perhaps also a great part of the body, become affected with oedematous swelling. The breathing is hurried by any quick or laborious motion of the body, and the heart is liable to palpitation and syncope. A Leadach

sometimes occurs ; but more certainly pains of the back, loins, and haunches.

M. These symptoms, when occurring in a high degree constitute the *chlorosis* of authors, hardly ever appearing separate from the retention of the menses ; and, attending to these symptoms, the cause of this retention may, I think, be perceived.

These symptoms manifestly show a considerable laxity and flaccidity of the whole system ; and therefore give reason to conclude, that the retention of the menses accompanying them, is owing to a weaker action of the vessels of the uterus ; which therefore do not impel the blood into their extremities with a force sufficient to open these and pour out blood by them.

M1. How it happens that at a certain period of life a flaccidity of the system arises in young women not originally affected with any such weakness or laxity, and of which, but a little time before, they had given no indication, may be difficult to explain ; but I would attempt it in this way.

As a certain state of the ovaria in females, prepares and disposes them to the exercise of venery, about the very period at which the menses first appear, it is to be presumed that the state of the ovaria and that of the uterine vessels are in some measure connected together ; and as generally symptoms of a change in the state of the former appear before those of the latter, it may be inferred, that the state of the ovaria has a great share in exciting the action of the uterine vessels, and producing the menstrual flux. But, analogous to what happens in the male sex, it may be presumed, that in females a certain state of the genitals is necessary to give tone and tension to the whole system ; and therefore that, if the stimulus arising from the genitals be wanting, the whole system may fall into a torpid and flaccid state, and from thence the chlorosis and retention of the menses may arise.

MII. It appears to me, therefore, that the retention of the menses is to be referred to a certain state or affection of the ovaria : but what is precisely the nature of this

affection, or what are the causes of it, I will not pretend to explain ; nor can I explain in what manner that primary cause of retention is to be removed. In this, therefore, as in many other cases, where we cannot assign the proximate cause of diseases, our indications of cure must be formed for obviating and removing the morbid effects or symptoms which appear.

MIII. The effects, as has been said in M. consist in a general flaccidity of the system, and consequently in a weaker action of the vessels of the uterus ; so that this debility may be considered as the more immediate cause of the retention. This, therefore, is to be cured by restoring the tone of the system in general, and by exciting the action of the uterine vessels in particular.

MIV. The tone of the system in general is to be restored by exercise, and, in the beginning of the disease, by cold bathing. At the same time, tonic medicines may be employed ; and of these the chalybeates have been chiefly recommended.

MV. The action of the vessels of the uterus may be excited :

1st, By determining the blood into them more copiously ; which is to be done by determining the blood into the descending aorta, by purging, by the exercise of walking, by friction, and by warm bathing of the lower

* Rx Limat. Ferr. P. æpar. gr. x.

Pulv. Aromat. gr. v. M.

Fiat Pulv. te. in die sumend.

Vel,

Rx Pulv. Cort. Peruv. 3ij.

Conf. Cort. Aurant. 3fs.

Limat. Ferr. P. æp. 3ij.

Syr. Simp. vel Zenzib. gr. i.

Sumat Cochli. Parv. bis vel ter in die.

Vel,

Rx Limat. Ferr. P. æpar. 3ij.

Extr. Gent. vel Cinchonæ.

Sap. n. Hispan. 3a, 3i.

Pulv. Aloes Socotorin. gr. x.

M. fiat Mass. in Pilul. æqual.

xlviii. Dividenda—Quarum Sumat ij. bis terve in die.

Vel,

Rx Vin. Aloeticci, 3j.

Tinct. Ferri. Muriat. gutt. xx.

Decoct. Cort. Peruv. 3ij.

Syr. Aurant. 3ij. M. fiat haustus bis in die sumendus.

extremities. It is also probable that the blood may be determined more copiously into the hypogastric arteries which go to the uterus, by a compression of the iliacs; but the trials of this kind hitherto made have seldom succeeded.

MVI. 2dly, The action of the uterine vessels may be excited by stimulants applied to them. Thus those purgatives which particularly stimulate the intestinum rectum, may also prove stimulant to the uterine vessels connected with those of the rectum. The exercise of venery certainly proves a stimulus to the vessels of the uterus; and therefore may be useful when, with propriety, it can be employed. The various medicines recommended as stimulants of the uterine vessels, under the title of Emmenagogues, have never appeared to me to be effectual; and I cannot perceive that any of them are possessed of a specific power in this respect. Mercury, as an universal stimulant, may act upon the uterus, but cannot be very safely employed in chlorotic persons. One of the most powerful means of exciting the action of the vessels in every part of the system is, the electrical shock; and it has often been employed with success for exciting the vessels of the uterus.

MVII. The remedies (MIII.—MVI.) now mentioned, are those adapted to the *retention* of the menses; and I am next to consider the case of *suppression*. In entering upon this, I must observe, that every interruption of the flux, after it has once taken place, is not to be considered as a case of suppression: for the flux, upon its first appearance, is not always immediately established in its regular course; and therefore, if an interruption happen soon after the first appearance, or even in the course of the first, or perhaps second year after, it may often be considered as a case of retention, especially when the disease appears with the symptoms peculiar to that state.

MVIII. Those which may be properly considered as cases of suppression, are such as occur after the flux has been for some time established in its regular course, and in which the interruption cannot be referred to the causes of retention (MII. MIII.) but must be imputed to

some resistance in the extremities of the vessels of the uterus. Accordingly, we often find the suppression induced by cold, fear, and other causes which may produce a constriction of these extreme vessels. Some physicians have supposed an obstructing lentor of the fluids to occasion the resistance now mentioned : but this is purely hypothetical, without any proper evidence of the fact ; and it is besides, from other considerations improbable.

MIX. There are indeed some cases of suppression that seem to depend upon a general debility of the system, and consequently of the vessels of the uterus. But in such cases, the suppression always appears as symptomatic of other affections, and is therefore not to be considered here.

MX. The idiopathic cases of suppression (MVIII.) seldom continue long without being attended with various symptoms or disorders in different parts of the body; very commonly arising from the blood which should have passed by the uterus, being determined more copiously into other parts, and very often with such force as to produce hemorrhagies in these. Hence hemorrhagies from the nose, lungs, stomach, and other parts, have appeared in consequence of suppressed menses. Besides these, there are commonly hysterical and dyspeptic symptoms produced by the same cause ; and frequently colic pains, with a bound belly.

MXI. In the idiopathic cases of suppression, (MVIII.) the indication of cure is to remove the constriction affecting the extreme vessels of the uterus ; and for this purpose, the chief remedy is warm bathing applied to the region of the uterus. This, however, is not always effectual, and I do not know of any other remedy adapted to the indication. Besides this, we have perhaps no other means of removing the constriction in fault, but that of increasing the action and force of the vessels of the uterus, so as thereby to overcome the resistance or constriction of their extremities. This therefore is to be attempted by the same remedies in the case of suppression, as those prescribed in the cases of retention (MIV.

—MVI.) The tonics, however, and cold bathing (MIV.) seem to be less properly adapted to the cases of suppression, and have appeared to me of ambiguous effect.

MXII. It commonly happens in the cases of suppression that though the menses do not flow at their usual periods, there are often at those periods some marks of an effort having a tendency to produce the discharge. It is therefore at those times especially when the efforts of the system are concurring, that we ought to employ the remedies for curing a suppression; and it is commonly fruitless to employ them at other times, unless they be such as require some continuance in their use to produce their effects.

MXIII. Nearly similar to the cases of suppression are those cases in which the menses flow after longer intervals and in lesser quantity than usual; and when these cases are attended with the disorders in the system (MX.) they are to be cured by the same remedies as the cases of entire suppression.

MXIV. It may be proper in this place to take notice of the dysmenorrhea, or cases of menstruation in which the menses seem to flow with difficulty, and are accompanied with much pain in the back, loins, and lower belly. We impute this disorder partly to some weaker action of the vessels of the uterus, and partly, perhaps more especially, to a spasm of its extreme vessels. We have commonly found the disease relieved by employing some of the remedies of suppression immediately before the approach of the period, and at the same time employing opiacs.

C H A P. IX.

OF SYMPTOMATIC HEMORRHAGIES.

MXV. I HAVE thought it very improper in this work, to treat of those morbid affections that are almost always symptomatic of other more primary diseases; and

this for several reasons, particularly because it introduces a great deal of confusion in directing practice, and leads physicians to employ palliative measures only. I shall here, however, deviate a little from my general plan, to make some reflections upon symptomatic hemorrhagies.

MXVI. The hemorrhagies of this kind that especially deserve our notice, are the Hematemesis, or Vomiting of Blood ; and the Hematuria, or the Voiding of blood from the urinary passage. Upon these I am here to make some remarks ; because, though they are very generally symptomatic, it is possible they may be sometimes primary and idiopathic affections ; and because they have been treated of as primary diseases in almost every system of the practice of physic.

SECT. I. *Of the Hematemesis, or Vomiting of Blood.*

MXVII. I have said above (in DCCCXLV,) in what manner blood thrown out from the mouth may be known to proceed from the stomach, and not from the lungs : but it may be proper here to say more particularly, that this may be certainly known : When the blood is brought up manifestly by vomiting without any coughing ; when this vomiting has been preceded by some sense of weight, anxiety, and pain, in the region of the stomach ; when the blood brought up is of a black and grumous appearance, and when it is manifestly mixed with other contents of the stomach ; we can seldom have any doubt of the source from whence the blood proceeds, and therefore of the existence of the disease we treat of.

MXVIII. We must allow it to be possible that a plethoric state of the body from general causes may be accompanied with causes of a peculiar determination and afflux of blood to the stomach, so as to occasion an hemorrhagy there, and thence a vomiting of blood ; and in such a case this appearance might be considered as a primary disease. But the history of diseases in the records of physic, afford little foundation for such a supposition ; and on the contrary, the whole of the instances of a vom-

iting of blood which have been recorded, pretty manifestly symptomatic of a more primary affection.

Of such symptomatic vomitings of blood, the chief instances are the following.

MXXIX. One of the most frequent is that which appears in consequence of a suppression of an evacuation of blood which had been for some time before established in another part of the body, particularly that of the menstrual flux in women.

MXXX. There are instances of a vomiting of blood happening from the *retention* of the menses ; but such instances are very uncommon, as a retention of the menses rarely happens in consequence of, or even with, a plethoric state of the body ; and as rarely does it produce that, or the hemorrhagy in question.

There are instances of a vomiting of blood happening to pregnant women ; that might therefore also be imputed to the suppression of the menses, which happens to women in that state. There have indeed been more instances of this than of the former case ; but the latter are still very rare : for although the blood which used to flow monthly before impregnation is, upon this taking place, retained, it is commonly so entirely employed in dilating the uterine vessels, and in the growth of the foetus, that it is seldom found to produce a plethoric state of the body, requiring a vicarious outlet.

The vomiting of blood, therefore, that is vicarious of the menstrual flux, is that which commonly and almost only happens upon a suppression of that flux, after it had been for some time established.

MXXI. When such a suppression happens, it may be supposed to operate by inducing a plethoric state of the whole body, and thereby occasioning hemorrhagy from other parts of it ; and hemorrhagies from many different parts of the body have been observed by physicians as occurring in consequence of the suppression we speak of. It is, however, the great variety of such hemorrhagies, that leads me to think, that with the plethoric state of the whole body there must be always some peculiar circumstances in the part from which the blood

flows, that determines its afflux to that particular, often singularly odd, part; and therefore, that such hemorrhagies may from these circumstances occur without any considerable plethora at the same time prevailing in the whole system.

MXXII. It is to be observed, that if we are to expect an hemorrhagy in consequence of a suppression of the menses inducing a plethoric state of the system, we should expect especially an hemoptysis, or hemorrhagy from the lungs, as a plethora might be expected to show its effects especially there; and accordingly, upon occasion of suppressed menses, that hemorrhagy occurs more frequently than any other; but even this, when it does happen, neither in its circumstances nor its consequences, leads us to suppose, that at the same time any considerable or dangerous plethora prevails in the body.

MXXIII. These considerations in MXXI. MXXII. will, I apprehend, apply to our present subject; and I would therefore allege, that a hematemesis may perhaps depend upon particular circumstances of the stomach determining an afflux of blood to that organ, and may therefore occur without any considerable or dangerous plethora prevailing in the system. What are the circumstances of the stomach, which, upon the occasion mentioned, may determine an afflux of blood to it, I cannot certainly or clearly explain; but presume that it depends upon the connection and consent which we know to subsist between the uterus and the whole of the alimentary canal, and especially that principal part of it the stomach.

MXXIV. From these reflections we may, I think, draw the following conclusions.

I. That the hematemesis we speak of is hardly ever a dangerous disease.

II. That it will hardly ever require the remedies suited to the cure of active hemorrhagy; and at least that it will require these only in those unusual cases in which there appear strong marks of a general plethora, and in which the vomiting of blood appears to be considerably active, very profuse, and frequently recurring.

III. That a vomiting of blood from suppressed menses, ought seldom to prevent the use of these remedies of amenorrhœa, which might be improper in the case of an active idiopathic hemorrhagy.

MXXV. Another case of symptomatic hematemesis quite analogous to that already mentioned, is the hematemesis following, and seemingly depending upon the suppression of an hemorrhoidal flux, which had been established and frequent for some time before.

This may perhaps be explained by a general plethoric state induced by such a suppression, and indeed some degree of a plethoric state must in such a case be supposed to take place : but that supposition alone will not explain the whole of the case ; for a general plethora would lead us to expect an hemoptysis (MXXII.) rather than an hematemesis ; and there is therefore something still wanting, as in the former case, to explain the particular determination to the stomach.

Whether such an explanation can be got from the connection between the different parts of the sanguiferous vessels of the alimentary canal, or from the connection of the whole of these vessels with the vena portarum, I shall not venture to determine. But in the mean time I imagine, that the explanation required is rather to be obtained from that connection of the stomach with the hemorrhoidal affection that I have taken notice of in DCCCNLVI.

MXXVI. However we may explain the hematemesis occasioned by a suppression of the hemorrhoids, the considerations in MXXI. MXXII. will apply here as in the analogous case of hematemesis from suppressed menses ; and will therefore allow us also to conclude here, that the disease we now treat of will seldom be dangerous, and will seldom require the same remedies that idiopathic and active hemorrhagy does.

MXXVII. The cases of hematemesis already mentioned, may be properly supposed to be hemorrhages, of the arterial kind ; but it is probable that the stomach is also liable to hemorrhages of the venous kind. (DCCLXVIII.)

In the records of physic there are many instances of vomitings of blood, which were accompanied with a tumefied spleen, which had compressed the vas breve, and thereby prevented the free return of venous blood from the stomach. How such an interruption of the venous blood may occasion an hemorrhagy from either the extremities of the veins themselves, or from the extremities of their correspondent arteries; we have explained above in DCCLXIX. and the histories of tumefied spleens compressing the vasa brevia afford an excellent illustration and confirmation of our doctrine on that subject, and render it sufficiently probable that vomitings of blood often arise from such a cause.

MXXVIII. It is also possible, that an obstruction of the liver resisting the free motion of the blood in the vena portarum, may sometimes interrupt the free return of the venous blood from the vessels of the stomach, and thereby occasion a vomiting of blood ; but the instances of this are neither so frequent nor so clearly explained as those of the former case.

MXXIX. Beside these cases depending on the state of the liver or spleen, it is very probable that other hemorrhagies of the stomach are frequently of the venous kind.

The disease named by Sauvages Melæna, and by other writers, commonly termed the Morbus Niger, DCCLXXII. consisting in an evacuation either by vomiting or by stool, and sometimes in both ways of a black and grumous blood, can hardly be otherwise occasioned, than by a venous hemorrhagy from some part of the internal surface of the alimentary canal.

It is, indeed, possible, that the bile may sometimes put on a black and viscid appearance, and give a real foundation for the appellation of an Atra Bilis : but it is certain, that instances of this are very rare ; and it is highly probable, that what gave occasion to the notion of an atra bilis among the ancients, was truly the appearance of blood poured into the alimentary canal in the manner I have mentioned ; and which appearance, we know, the blood always puts on when it has stagnated

there for any length of time. I suppose it is now generally thought, that Boerhaave's notion of such a matter existing in the mass of blood, is without any foundation ; whilst, by dissections in modern times, it appears very clearly, that the *morbis niger* presenting such an appearance of blood, always depends upon the effusion and stagnation I have mentioned.

MXXX. From this account of the melæna it will appear, that vomitings of blood may arise in consequence of blood being poured out in the manner I have mentioned, either into the cavity of the stomach itself, or into the superior portions of the intestines, from whence matters often pass into the stomach.

MXXXI. Both in the case of the melæna, and in the analogous cases from affections of the spleen or liver, it will appear, that the vomitings of blood occurring must be considered as symptomatic affections, not at all to be treated as a primary active hemorrhagy, but by remedies, if any such be known, that may resolve the primary obstructions.

MXXXII. I believe I have now mentioned almost the whole of the causes producing a hematemesis ; and certainly the causes mentioned, are those which most commonly give occasion to that symptom. Possibly, however, there may be some other causes of it, such as that singular one mentioned by Sauvage of an aneurism of the aorta bursting into the stomach : and it is possible, that some diseases of other contiguous parts, which have become closely adhering to the stomach, may sometimes, by a rupture into the cavity of the stomach, pour blood into it, which is afterwards rejected by vomiting. It is possible also, that abscesses and ulcerations of the stomach itself, may sometimes pour blood into its cavity to be thrown up by vomiting.

I did not think it necessary, among the symptomatic vomitings of blood, to enumerate those from external violence, nor, what is analogous to it, that which arises from violent straining to vomit ; which last, however, is much more rare than might be expected. In either of these cases the nature of the disease cannot be doubtful,

and the management of it will be readily understood from what has been delivered above with respect to moderating and restraining hemorrhagy in general.

SECT. II. Of the Hematuria, or the Voiding of Blood from the Urinary Passage.

MXXXIII. It is alleged, that an hematuria has occurred without any other symptom of an affection of the kidneys or urinary passages being present at the same time ; and as this happened to plethoric persons, and recurred at fixed periods, such a case has been supposed to be an instance of idiopathic hematuria, and of the nature of those active hemorrhagies I have treated of before.

MXXXIV. I cannot positively deny the existence of such a case ; but must observe, that there are very few instances of such upon the records of physic ; that none have ever occurred to my observation, or to that of my friends ; and that the observations adduced may be fallacious, as I have frequently observed an hematuria without symptoms of other affection of the kidney or urinary passages being, for the time, present ; whilst, however, fits of a nephralgia calculosa having, before or soon after, happened, rendered it to me sufficiently probable, that the hematuria was owing to a wound made by a stone present in some part of the urinary passages.

MXXXV. The existence of an idiopathic hematuria is further improbable, as a general plethora is more likely to produce an hemoptysis (MXXII.), and as we do not well know of any circumstances which might determine more particularly to the kidneys. An idiopathic hematuria, therefore, must certainly be a rare occurrence ; and instances of symptomatic affections of the same kind are very frequent.

MXXXVI. One of the most frequent is, that hematuria which attends the nephralgia calculosa, and seems manifestly to be owing to a stone wounding the internal surface of the pelvis of the kidney or of the ureter. In such cases, the blood discharged with the urine is sometimes of a pretty florid color, but for the most part is of a dark

hue : the whole of it is sometimes diffused or dissolved, and therefore entirely suspended in the urine ; but if it is in any large quantity, a portion of it is deposited to the bottom of the vessel containing the voided blood and urine. On different occasions, the blood voided puts on different appearances. If the blood poured out in the kidney has happened to stagnate for some time in the ureters or bladder, it is sometimes coagulated, and the coagulated part is afterwards broken down into a grumous mass of a black or dark color, and therefore gives the same color to the urine voided ; or if the quantity of broken down blood is small, it gives only a brownish urine resembling coffee. It sometimes also happens, that the blood stagnating and coagulating in the ureters, takes the form of these vessels, and is therefore voided under the appearance of a worm ; and if the coagulated blood happens to have, as it may sometimes have, the gluten separated from the red globules, these worm like appearances have their external surface whitish, and the whole seemingly forming a tube containing a red liquor. I have sometimes observed the blood which had seemingly been coagulated in the ureter, come away in an almost dry state, resembling the half burnt wick of a candle.

MXXXVII. These are the several appearances of the blood voided in the hematuria calculosa, when it proceeds especially from the kidneys or ureter ; and many of the same appearances are observed when the blood proceeds only from the bladder when a stone is lodged there ; but the attending symptoms will commonly point out the different seat of the disease.

In one case, when a quantity of blood from the kidney or ureter is coagulated in the bladder, and is therefore difficultly thrown out from this, the pain and uneasiness on such an occasion may appear chiefly to be in the bladder, though it contains no stone ; but the antecedent symptoms will commonly discover the nature of the disease.

MXXXVIII. In any of the cases of the hematuria calculosa, it will hardly be necessary to employ the remedies suited to an active hemorrhagy. It will be proper only

to employ the regimen fit for moderating hemorrhagy in general, and particularly here to avoid every thing or circumstance that might irritate the kidneys or ureters. Of such cases of irritation there is none more frequent or more considerable than the presence of hardened faeces in the colon ; and these therefore are to be frequently removed, by the frequent use of gentle laxatives.

MXXXIX. The hematuria calculosa may be properly considered as a case of the hematuria violenta : and therefore I subjoin to that the other instances of hematuria from external violence ; such as that from external contusion on the region of the kidney, and that from the violent or long continued exercise of the muscles incumbent on the kidneys. An instance of the latter cause occurs especially in riding.

MXL. It may also be considered as a case of the hematuria violenta, when the disease occurs in consequence of the taking in of certain acrid substances, which pass again especially by the urinary passages ; and, by inflaming and swelling the neck of the bladder, bring on a rupture of the overdistended blood-vessels, and give occasion to a bloody urine. The most noted instance of this is in the effect of cantharides in a certain quantity, any way introduced into the body. And possibly some other acrids may have the same effect.

MXLI. Beside these most frequent instances of hematuria, which cannot be considered as idiopathic hemorrhages, there are some other instances of hematuria mentioned by authors, that are still however manifestly symptomatic ; such as a discharge of blood from the urinary passages, in consequence of a suppression of either the menstrual or hemorrhoidal flux. These may be considered as analogous to the hematemesis produced by the like causes ; and the several reflections made above on that subject, will, I think, apply here, and particularly the conclusions formed in MXXIV. Instances, however, of either of these cases, and especially of the first, have been extremely rare.

MXLII. Of such symptomatic hematuria there is, however, one instance deserving notice ; and that is, when a

suppression of the hemorrhoidal flux, either by a communication of vessels, or merely by the vicinity of parts, occasions a determination of the blood into the vessels of the neck of the bladder, which in consequence of a rixis or anastomosis, pour out blood to be voided either with or without the urine. This case is what has been named the Hemorrhoides Vesicæ ; and with some propriety, when it is manifestly an evacuation vicarious of what had before been usually made from the rectum. With respect to the management of the hemorrhoides vesicæ , I would apply the whole of the doctrines that I have delivered above, with respect to the cure of the proper hemorrhoidal affection.

MXLIII. There remains still to be mentioned one other instance of symptomatic hematuria, which is that which happens in the case of confluent and putrid small pox, as well as in several other instances of putrid diseases. The blood, in such cases, may be presumed to come from the kidneys ; and I apprehend that it comes from thence in consequence of that fluidity which is always produced in the blood approaching to a putrid state. Such hematuria, therefore, is not to be considered as a symptom of any affection of the kidneys, but merely as a mark of the putrescent state of the blood.

MXLIV. In certain diseases the urine is discharged of such a deep red color, as to give a suspicion of its being tinged by blood present in it ; and this has given occasion to Sauvages, amongst the other species of hematuria, to mark the hematuria spuria, and the hematuria lateritia ; both which, however, he supposes to be without any blood present in the urine. In many cases it is of importance, in ascertaining the nature of a disease, to determine whether the red color of urine be from blood present in it, or from a certain state of the salts and oils which are always in greater or lesser proportion constituent parts of the urine ; and the question may be commonly determined by the following considerations.

It has been observed above, that when any considerable quantity of blood is voided with the urine, there is always a portion of it deposited at the bottom of the

vessel containing the voided blood and urine ; and in such a case there will be no doubt in attributing the color of the urine floating above, to some part of the blood diffused in it. The question, therefore, with respect to the presence of blood in the urine, can only occur when no such deposition as I have mentioned appears ; and when the blood that may be supposed to be present is dissolved or diffused, and therefore entirely suspended in the urine. In this case the presence of blood may be commonly known, 1st, By the color which blood gives, different from any urine without blood that I have ever seen ; and I think a little experience will enable most persons to make this distinction. 2dly, By this, that the presence of blood always diminishes the transparency of the urine with which it is mixed : and it is very seldom that urine, though very high colored, loses its transparency ; at least this hardly ever appears, if the urine is examined when recently voided. 3dly, When urine has blood mixed with it, it tinges a piece of linen dipped into it with a red color, which the highest colored urine without blood never does. 4thly, High-colored urine without blood, upon cooling, and remaining at rest in a vessel, almost always deposits a lateritious sediment ; and if upon any occasion bloody urine should deposit a sediment that may be of a portion of the blood formerly diffused in it, the difference however may be discerned by this that the sediment deposited by urine without blood, upon the urine's being again heated, will be entirely redissolved, which will not happen to any sediment from blood. Lastly, we know no state of urine without blood, which shows any portion of it coagulable by a heat equal to that of boiling water ; but blood diffused in urine is still coagulable by such a heat : and by this test, therefore, the presence of blood in urine may be commonly ascertained.

BOOK V.

OF PROFLUVIA*, OR FLUXES, WITH PYREXIA.

INTRODUCTION.

MXLV. FORMER nosologists have established a class of diseases under the title of Fluxes, or Profluvia ; but, as in this class they have brought together a great number of diseases, which have nothing in common, excepting the single circumstance of an increased discharge of fluids, and which also are, in other respects, very different from one another ; I have avoided so improper an arrangement, and have distributed most of the diseases comprehended in such a class by the nosologists, into places more natural and proper for them. I have, indeed, still employed here the general title ; but I confine it to such fluxes only, as are constantly attended with pyrexia, and which therefore necessarily belong to the class of diseases of which I am now treating.

Of the fluxes which may be considered as being very constantly febrile diseases, there are only two, the *catarrh* and *dysentery* ; and of these therefore I now proceed to treat.

* Pyrexia, attended with an increased excretion of a matter not naturally bloody. *Syn. Nof.*

C H A P. I.

OF THE CATARRH*.

MXLVI. THE catarrh is an increased excretion of mucus from the mucous membrane of the nose, fauces, and bronchiæ, attended with pyrexia.

Practical writers and nosologists have distinguished the disease by different appellations, according as it happens to affect those different parts of the mucous membrane, the one part more or less than the other : But I am of opinion, that the disease although affecting different parts, is always of the same nature, and proceeds from the same cause. Very commonly indeed those different parts are affected at the same time ; and therefore there can be little room for the distinction mentioned.

The disease has been frequently treated of under the title of Tussis, or Cough ; and a cough, indeed, always attends the chief form of catarrh, that is, the increased excretion from the bronchiæ : but a cough is so often a symptom of many other affections, which are very different from one another, that it is improperly employed as a generic title.

MXLVII. The remote cause of catarrh is, most commonly, cold applied to the body. This application of cold producing catarrh, can in many cases be distinctly observed ; and I believe it would always be so, were men acquainted with, and attentive to, the circumstances which determine cold to act upon the body. See xciv.—xcvi.

From the same paragraphs we may learn what in some persons gives a predisposition to catarrh.

MXLVIII. The disease, of which I am now to treat, generally begins with some difficulty of breathing through the nose, and with a sense of some fulness stopping up that passage. This is also often attended with some dull pain and a sense of weight in the forehead, as

* Pyrexia, often contagious, accompanied with an increased excretion of mucus from the membrane of the nose, fauces, and bronchiæ. *Syn. Nas.*

well as some stiffness in the motion of the eyes. These feelings, sometimes at their very first beginning, and always soon after, are attended with the distillation from the nose, and sometimes from the eyes, of a thin fluid, which is often found to be somewhat acrid, both by its taste, and by its fretting the parts over which it passes.

MXLIX. These symptoms constitute the *coryza* and *gravedo* of medical authors, and are commonly attended with a sense of lassitude over the whole body. Sometimes cold shiverings are felt, at least the body is more sensible than usual to the coldness of the air ; and with all this the pulse becomes, especially in the evenings, more frequent than ordinary.

ML. These symptoms seldom continue long before they are accompanied with some hoarseness, and a sense of roughness and soreness in the trachea, and with some difficulty of breathing, attributed to a sense of straitness of the chest, and attended with a cough which seems to arise from some irritation felt at the glottis. The cough is generally at first dry, occasioning pains about the chest and more especially in the breast. Sometimes, together with these symptoms, pains resembling those of the rheumatism, are felt in several parts of the body, particularly about the neck and head. While these symptoms take place, the appetite is impaired, some thirst arises, and a general lassitude is felt over all the body.

MLI. These symptoms (**MXLVIII.—ML.**) mark the violence and height of the disease ; which, however, does not commonly continue long. By degrees the cough becomes attended with a copious excretion of mucus, which is at first thin, but, gradually becoming thicker, is brought up with less frequent and less laborious coughing. The hoarseness and soreness of the trachea likewise going off, the febrile symptoms abating, the cough becoming less frequent, and with less expectoration the disease soon after ceases altogether.

MLII. Such is generally the course of this disease which is commonly neither tedious nor dangerous ; but upon some occasions, it is in both respects otherwise.

A person affected with catarrh seems to be more than usually liable to be affected by cold air ; and in that condition, if exposed to cold, the disease, which seemed to be yielding is often brought back with greater violence than before ; and is rendered not only more tedious than otherwise it would have been, but also more dangerous by the supervening of other diseases.

MLIII. Some degree of the cynanche tonsillaris often accompanies the catarrh ; and, when the latter is aggravated by a fresh application of cold, the cynanche also becomes more violent and dangerous, in consequence of the cough which is present at the same time.

MLIV. When a catarrh has been occasioned by a violent cause ; when it has been aggravated by improper management ; and especially when it has been rendered more violent by fresh and repeated applications of cold, it often passes into a pneumonic inflammation attended with the utmost danger.

MLV. Unless, however, such accidents as those of MLII.—MLIV. happen, a catarrh, in sound persons not far advanced in life, is, I think, always a slight disease, and attended with little danger. But in persons of a phthisical disposition, a catarrh may readily produce a hemoptysis, or perhaps form tubercles in the lungs ; and more certainly, in persons who have tubercles already formed in the lungs, an accidental catarrh may occasion the inflammation of these tubercles, and in consequence produce a phthisis pulmonalis.

MLVI. In elderly persons, a catarrh sometimes proves a dangerous disease. Many persons, as they advance in life, and especially after they have arrived at old age, have the natural mucus of the lungs poured out in greater quantity, and consequently requiring a frequent expectoration. If therefore a catarrh happen to such persons, and increase the afflux of fluids to the lungs, with some degree of inflammation, it may produce the peri-pneumonia notha, which in such cases is very often fatal. See ccclxxvi.—ccclxxxii.

MLVII. The proximate cause of catarrh seems to be an increased afflux of fluids to the mucous membrane of

the nose, fauces, and bronchiaæ, along with some degree of inflammation affecting these parts. The latter circumstance is confirmed by this, that in the case of catarrh, the blood drawn from a vein commonly exhibits the same inflammatory crust which appears in the case of phlegmasiae.

MLVIII. The application of cold which occasions a catarrh, probably operates by diminishing the perspiration usually made by the skin, and which is therefore determined to the mucous membrane of the parts above mentioned*. As a part of the weight which the body daily loses by insensible evacuation, is owing to an exhalation from the lungs, there is probably a connection between this exhalation and the cutaneous perspiration, so that the one may be increased in proportion as the other is diminished : and therefore we may understand how the diminution of cutaneous perspiration, in consequence of the application of cold, may increase the afflux of fluids to the lungs, and thereby produce catarrh.

MLIX. There are some observations made by Dr. James Keil which may seem to render this matter doubtful ; but there is fallacy in his observations. The evident effects of cold in producing coryza, leave the matter in general without doubt ; and there are several other circumstances which show a connection between the lungs and the surface of the body.

MLX. Whether, from the suppression of perspiration, a catarrh be produced merely by an increased afflux of fluids, or whether the matter of perspiration be at the same time determined to the mucous glands, and there ex-

* This explanation of the operation of the exciting cause of catarrh, is by no means satisfactory ; it is not easily conceivable how an obstruction of perspiration should be peculiarly determined to the membranes of the bronchiaæ and fauces, or by what sympathy the diminished action on the surface should be attended with an increased action of these parts. In this case the doctrine of the celebrated Dr. Brown is happily applied ; and the accumulation of excitability which takes place in the membrane during the abstraction of the usual stimulus of heat, prepares it for an increased action upon the renovation of this stimulus. Hence, the quietence produced by inhaling the cold air, is succeeded by an inflammatory affection when the heat is renewed. The impropriety of the warm treatment which some follow, from an idea that this complaint arises from *cold*, in the vulgar acceptation of the word, must be obvious from the above statement.

cite a particular irritation, may be uncertain ; but the latter supposition is sufficiently probable.

MLXI. Although, in the case of a common catarrh, which is in many instances sporadic, it may be doubtful whether any morbid matter be applied to the mucous glands ; it is, however, certain, that the symptoms of a catarrh do frequently depend upon such a matter being applied to these glands, as appears from the case of measles, chin-cough, and especially from the frequent occurrence of contagious and epidemical catarrh.

MLXII. The mention of this last leads me to observe, that there are two species of catarrh, as I have marked in my Synopsis of Nosology. One of these as I suppose, is produced by cold alone, as has been explained above ; and the other seems manifestly to be produced by a specific contagion.

Of such contagious catarrhs, I have pointed out in the Synopsis many instances occurring from the 14th century down to the present day. In all these instances the phenomena have been much the same ; and the disease has always been particularly remarkable in this, that it has been the most widely and generally spreading epidemic known. It has seldom appeared in any one country of Europe, without appearing successively in every other part of it ; and, in some instances, it has been even transferred to America, and has been spread over that continent, so far as we have had opportunities of being informed.

MLXIII. The catarrh from contagion appears with nearly the same symptoms as those mentioned *MLXVIII.*
—ML. It seems often to come on in consequence of the application of cold. It comes on with more cold shivering than the catarrh arising from cold alone, and sooner shows febrile symptoms, and these likewise in a more considerable degree. Accordingly, it more speedily runs its course, which is commonly finished in a few days. It sometimes terminates by a spontaneous sweat ; and this, in some persons, produces a miliary eruption. It is, however, the febrile state of this disease especially, that is finished in a few days : for the cough, and other

catarrhal symptoms, do frequently continue longer ; and often, when they appear to be going off, they are renewed by any fresh application of cold.

MLXIV. Considering the number of persons who are affected with catarrh, of either the one species or the other, and escape from it quickly without any hurt, it may be allowed to be a disease very free from danger : but it is not always to be considered as such ; for in some persons it is accompanied with pneumonic inflammation. In the phthisically disposed, it often accelerates the coming on of phthisis ; and in elderly persons it frequently proves fatal in the manner explained above, MLIV. and MLVI.

MLXV. The cure of catarrh is nearly the same, whether it proceed from cold or contagion ; with this difference, that in the latter case, remedies are commonly more necessary than in the former.

In the cases of a moderate disease, it is commonly sufficient to avoid cold, and to abstain from animal food for some days; or perhaps to lie a bed, and, by taking frequently of some mild and diluent drink a little warmed, to promote a very gentle sweat ; and after these to take care to return very gradually only, to the use of the free air.

MLXVI. When the disease is more violent, not only the antiphlogistic regimen must be exactly observed, but various remedies also become necessary.

To take off the phlogistic diathesis which always attends this disease, blood letting, in a larger or smaller quantity, and repeated according as the symptoms shall require, is the proper remedy.

For restoring the determination of the fluids to the surface of the body, and at the same time for expediting the secretion of mucus in the lungs, which may take off the inflammation of its membrane, vomiting is the most effectual means

For the latter purpose, it has been supposed, that squills, gum ammoniac, the volatile alkali, and some other medicines, might be useful : but their efficacy has never appeared to me to be considerable ; and, if squills

have ever been very useful, it seems to have been rather by their emetic, than by their expectorant powers.

When the inflammatory affections of the lungs seem to be considerable, it is proper, besides blood letting, to apply blisters on some part of the thorax.

As a cough is often the most troublesome circumstance of this disease, so demulcents may be employed to alleviate it. See CCCLXXIII.

But, after the inflammatory symptoms have much abated, if the cough should still continue, opiates afford the most effectual means of relieving it ; and, in the circumstances just now mentioned, they may be very safely employed. See CCCLXXV.

After the inflammatory and febrile states of this disease are almost entirely gone, the most effectual means of discussing all remains of the catarrhal affection, is by some exercise of gestation diligently employed.



C H A P. II.

OF THE DYSENTERY.*

MLXVII. **T**HE dysentery is a disease in which the patient has frequent stools, accompanied with much gripping, and followed by a tenesmus. The stools, though frequent, are generally in small quantity ; and the matter voided is chiefly mucus, sometimes mixed with blood. At the same time, the natural fæces seldom appear ; and when they do, it is generally in a compact and hardened form.

MLXVIII. This disease occurs especially in summer and autumn, at the same time with autumnal intermittent and remittent fevers ; and with these it is sometimes combined or complicated.

MLXIX. The disease comes on sometimes with cold shiverings, and other symptoms of pyrexia ; but more

* Contagious pyrexia, accompanied with frequent mucous or bloody stools, while the natural fæces are generally retained ; gripes and tenesmus.
Syn. Nos.

commonly the symptoms of the topical affection appear first. The belly is costive, with an unusual flatulence in the bowels. Sometimes, though more rarely, some degree of diarrhoea is the first appearance. In most cases the disease begins with griping, and a frequent inclination to go to stool. In indulging this, little is voided ; but some tenesmus attends it. By degrees the stools become more frequent, the griping more severe, and the tenesmus more considerable. Along with these symptoms there is a loss of appetite ; and frequently sickness, nausea, and vomiting, also affecting the patient. At the same time there is always more or less of pyrexia present which is sometimes of the remittent kind, and observes a tertian period. Sometimes the fever is manifestly inflammatory, and very often of a putrid kind. These febrile states continue to accompany the disease during its whole course, especially when it terminates soon in a fatal manner. In other cases, the febrile state almost entirely disappears, while the proper dysenteric symptoms remain for a long time after.

MLXX. In the course of the disease, whether of a shorter or longer duration, the matter voided by stool is very various. Sometimes it is merely a mucous matter, without any blood, exhibiting that disease which Dr. Roederer has named the *morbus mucosus*, and others the *dysenteria alba*. For the most part, however, the mucus discharged is more or less mixed with blood. This sometimes appears only in streaks amongst the mucus ; but at other times is more copious, tinging the whole of the matter discharged ; and upon some occasions a pure and unmixed blood is voided in considerable quantity. In other respects, the matter voided is variously changed in color and consistence, and is commonly of a strong and unusually fetid odor. It is probable that sometimes a genuine pus is voided, and frequently a putrid sanguis, proceeding from gangrenous parts. There are very often mixed with the liquid matter, some films of a membranous appearance, and frequently some small masses of a seemingly sebaceous matter.

MLXXI. While the stools consisting of these various matters are, in many instances, exceedingly frequent, it is seldom that natural faeces appear in them ; and when they do appear, it is, as I have mentioned, in the form of scybala, that is, in somewhat hardened, separate balls. When these are voided, whether by the efforts of nature, or as solicited by art, they procure a remission of all the symptoms, and more especially of the frequent stools, griping, and tenesmus.

MLXXII. Accompanied with these circumstances, the disease proceeds for a longer or a shorter time. When the pyrexia attending it is of a violent inflammatory kind, and more especially when it is of a very putrid nature, the disease often terminates fatally in a very few days, with all the marks of a supervening gangrene. When the febrile state is more moderate, or disappears altogether, the disease is often protracted for weeks, and even for months ; but even then, after a various duration, it often terminates fatally, and generally in consequence of a return and considerable aggravation of the inflammatory and putrid states. In some cases, the disease ceases spontaneously ; the frequency of stools, the griping, and tenesmus, gradually diminishing while natural stools return. In other cases, the disease, with moderate symptoms, continues long, and ends in a diarrhoea, sometimes accompanied with lienteric symptoms.

MLXXIII. The remote causes of this disease have been variously judged of. It generally arises in summer or autumn, after considerable heats have prevailed for some time, and especially after very warm and at the same time very dry states of the weather ; and the disease is much more frequent in warm than in cooler climates. It happens, therefore, in the same circumstances and seasons which considerably affect the state of the bile in the human body ; but as the cholera is often without any dysenteric symptoms, and copious discharges of bile have been found to relieve the symptoms of dysentery, it is difficult to determine what connection the disease has with the state of the bile.

MLXXIV. It has been observed, that the effluvia from very putrid animal substances, readily affect the alimentary canal ; and upon some occasions they certainly produce a diarrhoea : but whether they ever produce a genuine dysentery, I have not been able to learn with certainty.

MLXXV. The dysentery does often manifestly arise from the application of cold, but the disease is always contagious ; and, by the propagation of such contagion, independent of cold, or other exciting causes, it becomes epidemic in camps and other places. It is therefore to be doubted, if the application of cold does ever produce the disease, unless where the specific contagion has been previously received into the body : And upon the whole, it is probable, that a specific contagion is to be considered as always the remote cause of this disease.

MLXXVI. Whether this contagion, like many others, be of a permanent nature, and only shews its effects in certain circumstances which render it active, or if it be occasionally produced, I cannot determine. Neither, if the latter supposition be received, can I say by what means it may be generated. As little do we know anything of its nature, considered in itself ; or at most this only, that, in common with many other contagions, it appears to be commonly of a putrid nature, and capable of inducing a putrescent tendency in the human body. This, however, does not at all explain its peculiar power in inducing those symptoms which properly and essentially constitute the disease of dysentery, (MLXVII.)

MLXXVII. Of these symptoms, the proximate cause is still obscure. The common opinion has been, that the disease depends upon an acrid matter received into, or generated in the intestines themselves, exciting their peristaltic motion, and thereby producing the frequent stools which occur in this disease. But this supposition cannot be admitted; for, in all the instances known of acrid substances applied to the intestines and producing frequent stools, they at the same time produce copious stools, as might be expected from acrid substances applied to any length of the intestines. This, however, is not

the case in dysentery ; in which the stools, however frequent, are generally in very small quantity; and such as may be supposed to proceed from the lower parts of the rectum only. With respect to the superior portions of the intestines, and particularly those of the colon, it is probable they are under a preternatural and considerable degree of constriction ; for as I have observed above, the natural fæces are seldom voided ; and when they are, it is in a form which gives reason to suppose, they have been long retained in the cells of the colon, and consequently that the colon had been affected with a preternatural constriction. This is confirmed by almost all the dissections which have been made of the bodies of dysenteric patients, in which, when gangrene had not entirely destroyed the texture and form of the parts, considerable portions of the great guts have been found affected with a very considerable constriction.

MLXXVIII. I apprehend, therefore, that the proximate cause of dysentery, or at least the chief part of the proximate cause, consists in a preternatural constriction of the colon, occasioning at the same time those spasmodic efforts which are felt in severe gripings, and which efforts, propagated downwards to the rectum, occasion there the frequent mucous stools and tenesmus. But, whether this explanation shall be admitted or not, it will still remain certain, that hardened fæces retained in the colon are the cause of the griping, frequent stools, and tenesmus : for the evacuation of these fæces, whether by nature or by art, gives relief from the symptoms mentioned ; and it will be more fully and usefully confirmed by this, that the most immediate and successful cure of dysentery is obtained by an early and constant attention to the preventing the constriction, and the frequent stagnation of fæces in the colon.

MLXXIX. In this manner I have endeavored to ascertain the proximate cause of dysentery, and therefore to point out also the principal part of the cure, which, from want of the proper view of the nature of the disease, seems to have been in several respects fluctuating and undetermined among practitioners.

MLXXX. The most eminent of our late practitioners, and of greatest experience in this disease, seem to be of opinion, that the disease is to be cured most effectually by purging assiduously employed. The means may be various ; but the most gentle laxatives are usually sufficient ; and as they must be frequently repeated, the most gentle are the most safe ; the more especially as an inflammatory state so frequently accompanies the disease. Whatever laxatives produce an evacuation of natural faeces, and a consequent remission of the symptoms, will be sufficient to effectuate the cure. But if gentle laxatives shall not produce the evacuation now mentioned, some more powerful medicines must be employed : and I have found nothing more proper or convenient than tartar emetic, given in small doses, and at such intervals as may determine their operation to be chiefly by stool. Rhubarb, so frequently employed, is in several respects amongst the most improper purgatives.

MLXXXI. Vomiting has been held a principal remedy in this disease ; and may be usefully employed in the beginning of it, with a view to both the state of the stomach and of the fever ; but it is not necessary to repeat it often ; and unless the emetics employed operate also by stool, they are of little service. Ipecacuanha seems to possess no specific power ; and it proves only useful when so managed as to operate chiefly by stool.

MLXXXII. For relieving the constriction of the colon, and evacuating the retained faeces, glysters* may sometimes be useful : but they are seldom so effectual as laxatives given by the mouth ; and acrid glysters, if they be not effectual in evacuating the colon, may prove hurtful by stimulating the rectum too much.

MLXXXIII. The frequent and severe griping attending this disease, leads almost necessarily to the use of opiates, and they are very effectual for the purpose of relieving

* Although glysters given for the purpose of procuring an evacuation of the faeces, are by no means so efficacious as laxatives given by the mouth, glysters of another kind, for allaying the irritation and tenesmus, may be sometimes employed with advantage, as,

1*lb* Gelatin. Amyli, 3*iv.*

Tinct. opii, 3*i.* M. ft. Enema.

from the gripes ; but by occasioning an interruption of the action of the small guts, they favor the constriction of the colon, and thereby sometimes aggravate the disease : and if at the same time the use of them supersede in any measure the employing of purgatives, it commonly does much mischief ; I believe it indeed to be only the neglect of purging that renders the use of op iates very necessary.

MLXXXIV. When the gripes are both frequent and severe, they may sometimes be relieved by the employment of a semicupium, or by a fomentation of the abdomen, continued for some time. In the same case, the pains may be relieved, and as I think, the constriction of the colon may be taken off, by blisters applied to the lower belly.

MLXXXV. At the beginning of this disease, when the fever is any way considerable, blood letting, in patients of tolerable vigor, may be proper and necessary ; and when the pulse is full and hard, with other symptoms of an inflammatory disposition, blood letting ought to be repeated. But, as the fever attending dysentery is often of a putrid kind, or does, in the course of the disease, become soon of that nature, blood letting must be employed with great caution.

MLXXXVI. From the account now given of the nature of this disease, it will be sufficiently obvious, that the use of astringents in the beginning of it must be absolutely pernicious*.

MLXXXVII. Whether an acrid matter be the original cause of this disease, may be uncertain : but from the indigestion and the stagnation of fluids in the stomach, which attend the disease, it may be presumed, that

* Although in the early stages of dysentery, even after the faeces have been properly evacuated: astringents are rather ambiguous, when the complaint is advanced, and threatens to degenerate into a chronic state, they may be had recourse to with no small benefit. The following formula will be found convenient :

R Elec. Catechu. 3 ij.

Tinct. Opii gutt. ix.

Aq. Fontan. 3 iv.

Cinnamon. Simp. 3 i.

Syr. Simp. 3 ℥. m. & st. mixt. cuius capiat cochl. 1. post singulas sedes liquidas.

some acrid matters are constantly present in the stomach and intestines, and therefore that demulcents may be always usefully employed. At the same time, from this consideration, that mild oily matters thrown into the intestines in considerable quantity always prove laxative, I am of opinion that the oleaginous demulcents are the most useful.

MLXXXVIII. As this disease is so often of an inflammatory or of a putrid nature, it is evident that the diet employed in it should be vegetable and acescent. Milk in its entire state is of doubtful quality in many cases ; but some portion of the cream is often allowable, and whey is always proper.

In the first stages of the disease, the sweet and subacid fruits are allowable, and even proper. It is in the more advanced stages only, that any morbid acidity seems to prevail in the stomach, and to require some reserve in the use of acescents. At the beginning of the disease, absorbents seem to be superfluous ; and by their astringent and septic powers they may be hurtful.

MLXXXIX. When this disease is complicated with an intermittent fever, and is protracted from that circumstance chiefly, it is to be treated as an intermittent, by administering the Peruvian bark, which, however, in the earlier periods of the disease, is hardly to be admitted.

P A R T II.

OF NEUROSES,

or

NERVOUS DISEASES.

P A R T II.
OF NEUROSES*,
OR
NERVOUS DISEASES.

INTRODUCTION.

MXC. IN a certain view, almost the whole of the diseases of the human body might be called NERVOUS : but there would be no use for such a general appellation ; and, on the other hand, it seems improper to limit the term, in the loose inaccurate manner in which it has been hitherto applied, to hysterical and hypochondriacal disorders, which are themselves hardly to be defined with sufficient precision.

MXCI. In this place I propose to comprehend, under the title of NEUROSES, all those preternatural affections of sense or motion, which are without pyrexia as a part of the primary disease ; and all those which do not depend upon a topical affection of the organs, but upon a more general affection of the nervous system, and of those powers of the system upon which sense and motion more especially depend.

MXCII. Of such diseases I have established a class, under the title of NEUROSES, or NERVOUS DISEASES. These I again distinguish, as they consist, either in the interruption and debility of the powers of sense and motion, or in the irregularity with which these powers are exercised ; and have accordingly arranged them under the four orders of *Comata*, *Adynamia*, *Spasmi*, and *Vesania*, to be defined as we proceed to treat of them more particularly.

* Sense and motion impaired, without idiopathic pyrexia, or any local disease. *Syn. Nv.*

B O O K I.

O F C O M A T A*,

OR OF THE

LOSS OF VOLUNTARY MOTION.

MXCIII. UNDER this title are comprehended those affections which have been commonly called the Soporose diseases ; but they are most properly distinguished by their consisting in some interruption or suppression of the powers of sense and voluntary motion, or of what are called the animal functions. These are indeed usually suspended in the time of natural sleep : but of all the diseases to be comprehended under our title, sleep, or even the appearance of it, is not constantly a symptom. Of such diseases I can mark and properly explain two genera only, which come under the titles of *Apoplexy* and *Palsy*.

C H A P. I.

OF APOPLEXY†.

MXCIV. APOPLEXY is that disease in which the whole of the external and internal senses, and the whole of the voluntary motions, are in some degree abolished.

* A diminution of voluntary motion, accompanied with sleep or an interruption of the senses. *Syn.* *Noſ.*

† A diminution of almost all voluntary motion, with sleep more or less profound, while the action of the heart and arteries continues.

ished; while respiration and the action of the heart continue to be performed. By its being an affection of the *whole* of the powers of sense and of voluntary motion, we distinguish it from *Palsy*; and by its being with the continuance of respiration and the action of the heart, it is distinguished from *Syncope*. I have further added to the ordinary definition of apoplexy, that the abolition of the powers of sense and motion is in *some degree* only; meaning by this to imply, that, under the title of Apoplexy, are here comprehended those diseases which, as differing from it in degree only, cannot, with a view either to pathology or practice, be properly distinguished from it. Such are the diseases sometimes treated of under the names of *Carus*, *Cataphora*, *Coma*, and *Lethargus*.

MXCV. Apoplexy, in all its different degrees, most commonly affects persons advanced in life, and especially those above sixty years of age. It most usually affects persons of large heads and short necks, persons of a corpulent habit, persons who have passed an indolent life and used a full diet, and especially those who have indulged in frequent intoxication. Men who have long labored under a frequent and copious discharge of blood from the hemorrhoidal vessels, upon either the suppression or spontaneous ceasing of that discharge, are particularly liable to be affected with apoplexy.

MXCVI. This disease frequently comes on very suddenly: but in many cases it is preceded by various symptoms, such as frequent fits of giddiness, frequent headaches, a hemorrhagy from the nose, some transitory interruptions of seeing and hearing, some false vision and hearing, some transitory degree of numbness or loss of motion in the extremities, some faltering of the tongue in speaking, a loss of memory, a frequent drowsiness, and frequent fits of incubus.

MXCVII. An attention to these symptoms, and to the predisponent circumstances (MXCV.), will often enable us to foresee the more violent attacks of this disease.

Species 1. Apoplexy (*Sanguinea*) with marks of general plethora, and chiefly of the head.

Species 2. Apoplexy (*Serosa*) in leucophlegmatic habits, and for the most part in old men. *Syn. Nos.*

MXCIII. When the disease comes on suddenly to a considerable degree, it has been frequently observed to have been immediately induced by violent exercise; by a full and long continued inspiration; by a fit of anger; by much external heat, especially that arising from a crowded assembly of people: by warm bathing; by intoxication; by long stooping with the head down; and by a tight ligature about the neck. The disease has been remarked to make its attacks most frequently in the spring season, and especially when the vernal heat suddenly succeeds to the winter cold.

LXCI. The symptoms denoting the presence of this disease will be sufficiently known from the definition given Mxciv. Although the whole of the body is affected with the loss of sense and motion, it sometimes takes place more upon one side of the body than the other; and, in that case, the side least affected with palsy is sometimes affected with convulsions. In this disease there is often a stertorous breathing; and this has been said to be a mark of the most violent state of the disease: but it is not always present even in the most complete form or most violent degree of the disease.

MC. The proximate cause of this disease may be, in general, whatever interrupts the motion of the nervous power from the brain to the muscles of voluntary motion; or, in so far as sense is affected, whatever interrupts the motion of the nervous power from the sentient extremities of the nerves to the brain.

MCI. Such an interruption of the motions of the nervous power may be occasioned, either *by some compression of the origin of the nerves, or by something destroying the mobility of the nervous power.* Both these causes we must treat of more particularly; and, first, of that of compression, seemingly the most frequent occasion of apoplexy, and perhaps the occasion of all those apoplexies arising from internal causes.

MCII. The loss of sense and motion in particular parts of the body, may be occasioned by a compression, either of the origin of certain nerves only, or of the same nerves in some part of their course from the brain to the or-

gans of sense and motion. Such cases of partial compression will be more properly considered hereafter ; and the affection I am now to treat of being general, it must depend upon a very general compression of the origin of the nerves, or medullary portion of the brain ; and therefore, this more general compression only is to be considered here.

MCIII. This compression of the origin of the nerves, or medullary portion of the brain, may be produced in different ways ; as,

1. By external violence fracturing and pressing in a part of the cranium.

2. By tumors, sometimes soft, sometimes bony, formed in different parts of the brain, or in its membranes, and becoming of such a bulk as to compress the medullary substance of the brain.

3. By the blood accumulated in the blood vessels of the brain, and distending them to such a degree as to compress the medullary portion of the same.

4. By fluids effused in different parts of the brain, or into the cavity of the cranium, and accumulated in such quantity as to occasion the compression we treat of.

And, as to this last, it is to be remarked here, that the fluids effused may be of two kinds : that is, they may be either a portion of the common mass of blood, poured out from red vessels ; or a portion of serum or colorless fluid, poured out chiefly by exhalents.

MCIV. Of these several causes of compression, the first is not to be considered here, because the removing it does not belong to our province ; and the consideration of the second may be omitted, as in most instances it is neither to be discerned nor cured by any means yet known. The third and fourth causes of compression, as they are the most frequent, and are also most properly the subjects of our art, so they are those which deserve our particular attention ; and we shall therefore endeavor to trace them further back in the series of causes which may produce them.

MCV. Both the states of over distention and of effusion may be produced by whatever increases the afflux and

and impetus of the blood in the arteries of the head ; such as violent exercise, a violent fit of anger, external heat applied, or any strong pressure upon the descending aorta.

MCVI. But both these states of over distention and of effusion, may also and seem to be more frequently produced by causes that operate by preventing the free return of the venous blood from the vessels of the head to the right ventricle of the heart.

NCVII. The venous vessels of the brain are of a conformation and distribution so peculiar, as lead us to believe that Nature intended to retard the motion of the blood, and accumulate it in these vessels ; and therefore, even very small additional resistances to the motion of the blood from these towards the right ventricle of the heart, may still more readily accumulate the blood in them. Such accumulation will most readily happen in advanced life, when the venous system in general is in a plethoric state, and when this plethora takes place especially in the venous vessels of the brain. It will, in like manner, be most apt to occur in persons whose heads are large with respect to the rest of the body ; and in persons of a short neck, which is unfavorable to the return of the venous blood from the head. The accumulation of blood in the venous vessels of the brain, will also be most likely to occur in persons of a corpulent habit, either because these may be considered to be in a plethoric state, or because obesity, by occasioning a compression of the blood vessels in other parts of the body, more readily fills those of the brain, which are entirely free from any such compression.

MCVIII. These are the circumstances in the constitution of the body, which, producing a slower motion and return of the venous blood from the vessels of the head, favor an accumulation and distension in them ; and we now proceed to mention the several occasional causes, which, in every person, may directly prevent the free return of the blood from the vessels of the head towards the heart. Such are,

1. Stooping down with the head, or other situations of the body in which the head is long kept in a depending state, and in which the gravity of the blood increases

the afflux of it by the arteries, and opposes the return of it by the veins.

2. A tight ligature about the neck, which compresses the veins more strongly than the arteries.

3. Any obstruction of a considerable number of the veins carrying the blood from the head, and more especially any considerable obstruction of the ascending vena cava.

4. Any considerable impediment of the free passage of the blood from the veins into the right ventricle of the heart ; and it is commonly by this, and the immediately preceding circumstance, that polypous concretions in the cava, or right ventricle, are found to occasion apoplexy.

5. The return of blood from the veins of the head towards the heart, is especially interrupted by every circumstance that produces a more difficult transmission of the blood through the vessels of the lungs. It is well known, that, at the end of every expiration, some interruption is given to the free transmission of the blood through the lungs ; and that this at the same time gives an interruption to the motion of the blood from the veins into the right ventricle of the heart. This clearly appears from that regurgitation of the blood in the veins which occasions the alternate heaving and subsiding that is perceived in the brain of living animals when the cranium is removed, and which is observed to be synchronous with the alternate motions of respiration. From this we readily perceive, that whatever occasions a difficulty in the transmission of the blood through the lungs, must also interrupt the free return of the venous blood from the vessels of the head ; and must therefore favor, and perhaps produce, an accumulation of blood, and an over distension in these vessels.

It is further to be observed, that, as a very full inspiration, continued for any length of time, occasions such an interruption of the free transmission of the blood through the lungs, as produces a suffusion of face, and a manifest turgescence of the blood vessels of the head and neck ; so every full and long continued inspiration may

occasion an accumulation of blood in the vessels of the head, to a very considerable degree. Thus, as every strong exertion of the muscular force of the body requires, and is attended with, a very full and long continued inspiration, we thence learn why the violent exertions of muscular force have been so often the immediate or exciting causes of apoplexy.

It may also be remarked, that corpulency and obesity seem to operate very much, by occasioning a more difficult transmission of the blood through the vessels of the lungs. It appears, that in fat persons, from the compression of the blood vessels in many parts of the body, the vessels of the lungs are thereby kept very full; so that, upon the least increase of bodily motion, which sends the blood faster into the lungs, a more frequent and laborious respiration becomes in such persons immediately necessary. This shows, that, in such persons, the blood is not freely transmitted through the lungs; a circumstance which, as in other instances, must give a constant resistance to the return of blood from the vessels of the head, and therefore, favor or occasion an accumulation of blood in them.

Is the motion of the blood in the vessels of the head, rendered slower by study, care and anxiety?

MCIX. It is to be observed further, that these several causes (MCV.—MCVIII.) of a preternatural fulness in the blood vessels of the brain, may produce apoplexy in different ways, according as the fulness takes place in the arteries or in the veins.

MCX. Accordingly, *first*, The increased afflux of blood into the arteries of the brain, and an increased action in these, may either occasion a rupture of their extremities, and thereby an effusion of red blood producing compression; or the same afflux and increased action may occasion an increased exhalation from their extremities of a serous fluid, which, if not as quickly reabsorbed, may soon accumulate in such quantity as to produce compression.

MCXI. *Secondly*, The plethoric state of the venous vessels of the brain may operate in three different ways:

1. The fulness of the veins may give such resistance to the blood flowing into them from the arteries, as to determine the impetus of the blood to be so much greater upon the extremities of the arteries as to occasion a rupture of these, and consequently an effusion of red blood, or the *Hæmorrhagia cerebri*, which HOFFMAN considers as a frequent cause of apoplexy, and which we have before explained in DCCLXXII.

2. Whilst the same resistance to the blood flowing from the arteries into the veins, increases the impetus of the blood in the former, this may, without occasioning rupture, increase the exhalation from their exhalant extremities, and produce an effusion of a serous fluid; in the same manner as such resistance in the veins produces hydropic effusions in other parts of the body.

3. If we may suppose, as no lymphatics have been yet discovered in the brain*, that the ordinary absorbents are not present there, and that the exhaled fluids are absorbed or taken up by the extremities of the veins; this will show still more clearly, that a resistance to the motion of the blood in the veins of the brain, may readily produce an accumulation of serous fluid in its cavities, and consequently a compression producing apoplexy.

MCXII. Beside these cases of apoplexy from afflux in the arteries, or resistance in the veins, an effusion of serum may happen from two other causes. The one is a relaxation of the exhalants, as in other cases of hydropic diathesis prevailing in the body; and it is not unusual for a general dropsy to end in apoplexy. The second is an over proportion of watery parts in the mass of blood, which is therefore ready to run off by the exhalants, as

* Although no direct proof has been adduced of the existence of lymphatics in the brain, we have strong presumptive arguments in favor of this opinion. The lymphatic glands in the neck are so numerous, that we have reason to suppose they are destined for the reception of more than the external lymphatics of the head. Analogy likewise, from their existence in other animals, favors this supposition. As there is a constant exhalation from the arteries in the brain, and as we know that the lymphatics are every where destined for the absorption of what is exhaled, this is likely performed in the brain in the same manner. Mr. Hewson found, upon opening the brain of a person who had labored under an enlargement of the lymphatic glands of the neck, a quantity of acrid matter, which had most probably been absorbed, and given rise to this affection.

in the case of an ischuria renalis ; which, when it proves incurable, very commonly terminates in apoplexy.

M CXIII. We have now mentioned the several causes of apoplexy depending upon compression ; and from the whole it will appear, that the most frequent of all these causes is a plethoric state, or an accumulation and congestion of blood in the venous vessels of the head, operating, according to its degree, in producing over distension or effusion. The frequent operation of such a cause will especially appear from a consideration of the predisponent circumstances (M XCIV), and from the antecedent symptoms (M XCVI.)

M CXIV. From the view I have now given of the causes of apoplexy arising from compression, it will readily appear that there is a foundation for the common distinction of this disease into the two kinds of Sanguine and Serous. But this distinction cannot be very usefully applied in practice, as both kinds may often depend on the same cause, that is, a venous plethora, and therefore requiring very nearly the same method of cure. The only distinction that can be properly made of apoplexies from compression, is perhaps the distinction of serous apoplexy, into that depending on the plethora mentioned (M CXIII.) ; and that depending upon hydropic diathesis, or an over proportion of water in the blood (M CXII.) ; the former causes giving a proper idiopathic, the latter only a symptomatic disease.

M CXV. Besides the causes now mentioned, occasioning apoplexy by compression, I allege there are other causes producing the same disease, by directly destroying the mobility of the nervous power. Such causes seem to be the mephitic air arising from fermenting liquors, and from many other sources ; the fumes arising from burning charcoal ; the fumes of mercury, of lead, and of some other metallic substances ; opium, alcohol, and many other narcotic poisons : To all which I would add the power of cold, of concussion, of electricity, and of certain passions of the mind.

M CXVI. None of these poisons, or noxious powers, seem to kill, by acting first upon the organs of respira-

tion, or upon the sanguiferous system ; and I believe their immediate and direct action to be upon the nervous power, destroying its mobility, because the same poisons show their power in destroying the irritability of muscles and of the nerves connected with them, when both these are entirely separated from the rest of the body.

MCXVII. It appears to me probable, that the apoplectic state in some degree accompanying, and almost always succeeding an epileptic paroxysm, does not depend upon compression, but upon a certain state of immobility of the nervous power, produced by certain circumstances in the nervous system itself, which sometimes seem to be communicated from one part of the body to another, and at length to the brain.

MCXVIII. The same observation may be made with respect to many instances of hysterical paroxysm ; and the circumstances, both of epileptic and hysterical paroxysms, ending in coma, or a degree of apoplexy, lead me to think, that also the apoplexy proceeding from retrocedent or atonic gout is of the same kind, or that it depends upon an immobility of the nervous power, rather than upon compression.

MCXIX. It may indeed happen, that as the apoplectic and gouty predispositions do often concur in the same person ; so it may consequently happen, that the apoplexy coming upon gouty persons may sometimes depend upon compression ; and dissections may accordingly discover that the circumstances of such a cause had preceded. But, in many cases of apoplexy following a retrocedent or atonic gout, no such antecedent or concomitant circumstances, as commonly occur in cases of compression, do distinctly or clearly appear ; while others present themselves, which point out an affection of the nervous power alone.

MCXX. With respect, however, to the circumstances which may appear upon the dissection of persons dead of apoplexy, there may be some fallacy in judging, from those circumstances, of the cause of the disease. Whatever takes off or diminishes the mobility of the nervous power, may very much retard the motion of the blood

in the vessels of the brain ; and that perhaps to the degree of increasing exhalation, or even of occasioning rupture and effusion : so that, in such cases, the marks of compression may appear upon dissection, though the disease had truly depended on causes destroying the mobility of the nervous power. This seems to be illustrated and confirmed from what occurs in many cases of epilepsy. In some of these, after a repetition of fits, recovered from in the usual manner, a fatuity is induced, which commonly depends upon a watery inundation of the brain : And in other cases of epilepsy, when fits have been often repeated without any permanent consequence, there happens at length a fatal paroxysm ; and upon dissection, it appears that an effusion of blood had happened. This, I think, is to be considered as a cause of death, not as a cause of the disease : for in such cases, I suppose that the disease had diminished the action of the vessels of the brain, and thereby given occasion to a stagnation, which produced the appearances mentioned. And I apprehend the same reasonings will apply to the cases of retrocedent gout, which, by destroying the energy of the brain, may occasion such a stagnation as will produce rupture, effusion, and death ; and, in such a case, the appearances upon dissection might lead us to think that the apoplexy had depended entirely upon compression.

MCXXI. The several causes mentioned in MCXV. are often of such power as to occasion immediate death, and therefore have not commonly been taken notice of as affording instances of apoplexy ; but as the operation of the whole of these causes is similar and analogous, and as in most instances of the operation of these causes an apoplectic state is manifestly produced, there can be little doubt in considering most of the instances of their effects as cases of apoplexy, and therefore such as fall properly under our consideration here.

MCXXII. This disease of apoplexy is sometimes entirely recovered from ; but more frequently it ends in death, or in a hemiplegia. Even when an attack of the disease is recovered from, we generally find it disposed to return ; and the repeated attacks of it almost always, sooner or later, bring on the events we have mentioned.

MCXXIII. The several events of this disease, in health, death, or another disease, may be expected and foreseen, from a consideration of the predisponent circumstances (MXXV.) ; of the antecedent symptoms (MXXVI.) ; of the exciting causes (MXXVIII.) ; of the violence and degree of the symptoms when the disease has come on (MXXIV.) ; of the duration of the disease ; and of the effects of the remedies employed.

MCXXIV. From the great danger attending this disease when it has come on (MCXXII.), it will readily appear, that our care should be chiefly directed to the prevention of it. This, I Think, may be often done, by avoiding the remote and exciting causes ; and how this may be accomplished, will be obvious from the enumeration of those causes given above (MXXVIII.) But it will also appear from what is said above, that the prevention of this disease will especially depend upon obviating the predisponent cause ; which, in most cases, seems to be a plethoric state of the blood vessels of the brain. This, I think, may be obviated by different means ; and, in the first place, by a proper management of exercise and diet.

MCXXV. The exercise ought to be such as may support the perspiration, without heating the body or hurrying respiration ; and therefore commonly by some mode of gestation. In persons not liable to frequent fits of giddiness, and who are accustomed to riding on horseback, this exercise is of all others the best. Walking, and some other modes of bodily exercise, may be employed with the restrictions just now mentioned ; but in old men, and in men of corpulent habits, bodily exercise ought always to be very moderate.

MCXXVI. In persons who pretty early in life show the predisposition to apoplexy, it is probable that a low diet, with a good deal of exercise, might entirely prevent the disease ; but in persons who are advanced in life before they think of taking precautions, and are at the same time of a corpulent habit, which generally supposes their having been accustomed to full living, it might not be safe to put them upon a low diet : and it may be enough that their diet be rendered more moderate than usual,

especially with respect to animal food ; and that at supper such food should be abstained from altogether.

In drinking, all heating liquors are to be abstained from, as much as former habits will allow ; and the smallest approach to intoxication is to be carefully shunned. For ordinary draught, small beer is to be preferred to plain water, as the latter is more ready to occasion costiveness, which in apoplectic habits is to be carefully avoided. The large use of tobacco, in any shape, may be hurtful ; and except in cases where it has been accustomed to occasion a copious excretion from the head, the interruption of which might not be safe, the use of tobacco should be avoided ; and even in the circumstances mentioned, where it may be in some measure necessary, the use of it should at least be rendered as moderate as possible.

MCXXVII. Evacuations by stool may certainly contribute to relieve the plethoric state of the vessels of the head ; and upon an appearance of any unusual turgescence in these, purging will be very properly employed : but when no such turgescence appears, the frequent repetition of large purging might weaken the body too much ; and for preventing apoplexy, it may for the most part be enough to keep the belly regular, and rather open, by gentle laxatives. In the summer season, it may be useful to drink every morning, of a gentle laxative mineral water, but never in large quantity.

MCXXVIII. In the case of a plethoric state of the system, it might be supposed that blood letting would be the most effectual means of diminishing the plethora, and of preventing its consequences ; and when an attack of apoplexy is immediately threatened, blood letting is certainly the remedy to be depended upon ; and blood should be taken largely, if it can be done, from the jugular vein, or temporal artery. But when no threatening turgescence appears, the obviating plethora is not judiciously attempted by blood letting, as we have endeavored to demonstrate above (DCCLXXXVII.) In doubtful circumstances, leeches applied to the temples, or scarifications of the hind head, may be more safe than general bleedings.

MCXXIX. When there are manifest symptoms of a plethoric state in the vessels of the head, a feton, or pea-isle, near the head, may be very useful in obviating any turgescence of the blood.

MCXXX. These are the means to be employed for preventing the apoplexy which might arise from a plethoric state of the vessels of the brain ; and if, at the same time, great care is taken to avoid the exciting causes (MCXVIII.) these means will be generally successful.

In the cases proceeding from other causes (MCXV.) as their application is so immediately succeeded by the disease, they hardly allow any opportunity for prevention.

MCXXXI. For the CURE of apoplexies from internal causes, and which I suppose to be chiefly those from compression, the usual violence and fatality of it require that the proper remedies be immediately and largely employed.

The patient is to be kept as much as possible in somewhat of an erect posture, and in cool air ; and therefore neither in a warm chamber, nor covered with bed clothes, nor surrounded with a crowd of people.

MCXXXII. In all cases of a full habit, and where the disease has been preceded by marks of a plethoric state, blood letting is to be immediately employed, and very largely. In my opinion, it will be most effectual when the blood is taken from the jugular vein ; but if that cannot be properly done, it may be taken from the arm. The opening of the temporal artery, when a large branch can be opened, so as suddenly to pour out a considerable quantity of blood, may also be an effectual remedy ; but in execution, it is more uncertain, and may be inconvenient. It may be in some measure supplied, by cupping and scarifying on the temples or hind head. This, indeed, should seldom be omitted ; and these scarifications are always preferable to the application of leeches.

With respect to every mode of blood letting, this is to be observed, that when in any case of apoplexy, it can be perceived that one side of the body is more affected with the loss of motion than the other, the blood letting, if possible, should be made on the side opposite to that most affected.

MCXXXIII. Another remedy to be employed is purging, to be immediately attempted by acrid glysters*, and at the same time, if any power of swallowing remain, by drastic purgatives† given by the mouth. These however, lest they may excite vomiting, should be given in divided portions at proper intervals.

MCXXXIV. Vomiting has been commended by some practitioners and writers : but apprehending that this might impel the blood with too much violence into the vessels of the head, I have never employed it.

MCXXXV. Another remedy to be immediately employed is blistering ; and I judge that this is more effectual when applied to the head, or near to it, than when it is applied to the lower extremities. This remedy I do not consider as a stimulant, or capable of making any considerable revulsion : but, applied to the head, I suppose it useful in taking off the hemorrhagic disposition so often prevailing there.

MCXXXVI. It has been usual with practitioners, together with the remedies already mentioned, to employ stimulants of various kinds : but I am disposed to think them generally hurtful ; and they must be so, wherever the fulness of the vessels, and the impetus of the blood in these, is to be diminished. Upon this principle it is therefore agreed, that stimulants are absolutely improper in what is supposed to be a sanguine apoplexy ; but they are commonly supposed to be proper in the serous. If, however, we be right in alleging that this also commonly depends upon a plethoric state of the blood vessels of the brain, stimulants must be equally improper in the one case as in the other.

MCXXXVII. It may be argued from the almost universal employment of stimulants, and sometimes with seeming advantage, that they may not be so hurtful as my notions of the causes of apoplexy lead me to suppose. But

* Rx Colocynthid. 3 i.

Aq. Fervent. 3 x. coque per sextam horæ partem, et liquori percolato adhuc tepido adde

Syr. e Spin. Cer. 3 i. fiat Enema.

† Rx Pulv. Rad. Jalapp. gr. xv.

Gum. Gambog

Hyd. Muriat. Mit. 22. gr. v. M. ft. Pulv. Purgans.

this argument is, in several respects, fallacious ; and particularly in this, that in a disease which, under every management, often proceeds so quickly to a fatal termination, the effects of remedies are not to be easily ascertained.

MCXXXVIII. I have now mentioned the several remedies which I think adapted to the cure of apoplexy arising from compression, and should next proceed to treat of the cure of apoplexy arising from those causes that directly destroy the mobility of the nervous power. But many of those causes are often so powerful, and thereby so suddenly fatal in their effects, as hardly to allow of time for the use of remedies ; and such cases therefore have been so seldom the subjects of practice, that the proper remedies are not so well ascertained as to enable me to say much of them here.

MCXXXIX. When, however, the application of the causes (MCXV.) is not so powerful as immediately to kill, and induces only an apoplectic state, some efforts are to be made to obviate the consequences, and to recover the patient : and even in some cases where the causes referred to, from the ceasing of the pulse and of respiration, and from a coldness coming upon the body, have induced an appearance of death ; yet, if these appearances have not continued long, there may be means of recovering the persons to life and health. I cannot, indeed, treat this subject completely ; but for the cure of apoplexy from several of the causes mentioned MCXV. shall offer the following general directions.

1. When a poison capable of producing apoplexy has been recently taken into the stomach, if a vomiting spontaneously arises, it is to be encouraged ; or if it does not spontaneously come on, a vomiting is to be immediately excited by art, in order that the poison may be thrown out as quickly as possible. If, however, the poison has been taken into the stomach long before its effects have appeared, we judge that, upon their appearance, the exciting of vomiting will be useless, and may perhaps be hurtful.

2. When the poison taken into the stomach, or otherwise applied to the body, has already induced an apoplectic state, as those causes do commonly at the same time occasion a stagnation or slower motion of the blood in the vessels of the brain and of the lungs, so it will generally be proper to relieve this congestion by taking some blood from the jugular vein, or from the veins of the arm.

3. Upon the same supposition of a congestion in the brain or lungs, it will generally be proper to relieve it by means of acrid glysters producing some evacuation from the intestines.

4. When these evacuations by blood letting and purging have been made, the various stimulants which have been commonly proposed in other cases of apoplexy, may be employed here with more probability and safety. One of the most effectual means of rousing apoplectics of this kind seems to be throwing cold water on several parts of the body, or washing the body all over with it.

5. Although the poison producing apoplexy happens to be so powerful as very soon to occasion the appearances of death above mentioned, yet, if this state has not continued long, the patient may often be recoverable, and the recovery is to be attempted by the same means that are directed to be employed for the recovery of drowned persons, and which are now commonly known.



C H A P. II.

OF PALSY*.

MCXL. **P**ALSY is a disease consisting in a loss of the power of voluntary motion, but affecting certain parts of the body only, and by this it is distinguished from apoplexy (Mxciv). One of the most frequent forms of palsy is when it affects the whole of the mus-

* Only some of the voluntary motions impaired, often attended with sopor. *Syn. Nos.*

cles on one side of the body, and then the disease is named a *Hemiplegia*.

M^{CXL}I. The loss of the power of voluntary motion may be owing either to a morbid affection of the muscles or organs of motion, by which they are rendered unfit for motion ; or to an interruption of the influx of the nervous power into them, which is always necessary to the motions of those that are under the power of the will. The disease, from the first of these causes, as consisting in an organic and local affection, we refer entirely to the class of local diseases. I am here to consider that disease only which depends upon the interrupted influx of the nervous power ; and it is to this disease alone I would give the appellation of *Palsy*. A disease depending on an interrupted influx of the nervous power may indeed often appear as merely a local affection ; but as it depends upon an affection of the most general powers of the system, it cannot be properly separated from the systematic affections.

M^{CXL}II. In palsy, the loss of motion is often accompanied with a loss of sense : but as this is not constantly the case, and as therefore the loss of sense is not an essential symptom of palsy, I have not taken it into my definition (M^{CXL}) ; and I shall not think it necessary to take any further notice of it in this treatise ; because, in so far as it is in any case a part of the paralytic affection, it must depend upon the same causes, and will be cured also by the very same remedies as the loss of motion.

M^{CXL}III. The palsy then, or loss of motion, which is to be treated of here, may be distinguished as of two kinds ; one of them depending upon an affection of the origin of the nerves in the brain, and the other depending upon an affection of the nerves in some part of their course between the brain and the organs of motion. Of the latter, as appearing in a very partial affection, I am not to speak particularly here ; I shall only treat of the more general paralytic affections, and especially of the hemiplegia (M^{CXL}.) At the same time I expect, that what I shall say upon this subject will readily apply

to both the pathology and practice in the cases of affections more limited.

MCXLIV. The hemiplegia (MCXL.) usually begins with or follows a paroxysm of apoplexy ; and when the hemiplegia, after subsisting for some time, becomes fatal, it is commonly by passing again into the state of apoplexy. The relation therefore or affinity between the two diseases is sufficiently evident ; and is further strongly confirmed by this, that the hemiplegia comes upon persons of the same constitution (MXCV.) and is preceded by the same symptoms (MXCVIII.) that have been taken notice of with respect to apoplexy.

MCXLV. When a fit of apoplexy has gone off, and there remains a state of palsy appearing as a partial affection only, it might perhaps be supposed that the origin of the nerves is in a great measure relieved ; but in so far as commonly there still remain the symptoms of the loss of memory, and of some degree of fatuity, these I think show that the organ of intellect, or the common origin of the nerves, is still considerably affected.

MCXLVI. Thus, the hemiplegia, from its evident connection with, and near relation to apoplexy, may be properly considered as depending upon like causes ; and consequently, either upon a compression preventing the flow of the nervous power from the brain into the organs of motion, or upon the application of narcotic or other powers (MCXV.) rendering the nervous power unfit to flow in the usual and proper manner.

MCXLVII. We begin with considering the cases depending upon compression.

The compression occasioning hemiplegia may be of the same kind, and of all the different kinds that produce apoplexy, and therefore either from tumor, over distension, or effusion. The existence of tumor giving compression, may often be better discerned in the case of palsy than in that of apoplexy, as its effects often appear at first in a very partial affection.

MCXXLVIII. the other modes of compression, that is, of over distension and effusion, may, and commonly do take place, in hemiplegia ; and when they do, their op-

eration here differs from that producing apoplexy, by its effects being partial, and on one side of the body only.

It may seem difficult to conceive that an over distension can take place in the vessels on one side of the brain only ; but it may be understood : and in the case of a palsy, which is both partial and transitory, it is perhaps the only condition of the vessels of the brain that can be supposed. In a hemiplegia, indeed, which subsists for any length of time, there is probably always an effusion, either sanguine or serous : but it is likely that even the latter must be supported by a remaining congestion in the blood vessels.

MCXLIX. That a sanguine effusion can happen without becoming very soon general, and thereby occasioning apoplexy and death, may also seem doubtful : but dislections prove that in fact it does happen, accasioning palsy only ; though it is true that this more commonly depends upon an effusion of serous fluid, and of this only.

MCL. Can a palsy occasioned by a compression remain, though the compression be removed ?

MCI. From what has been said MCXLIV. it will be obvious, that the hemiplegia may be prevented by all the several means proposed MCXXV. *et seq.* for the prevention of apoplexy.

MCLII. Upon the same grounds, the CURE of palsy must be very much the same with that of apoplexy (MCXXX. *et seq.*) ; and when palsy has begun as an apoplexy, it is presumed, that, before it is to be considered as palsy, all those several remedies have been employed. Indeed, even when it happens that on the first attack of the disease the apoplectic state is not very complete, and that the very first appearance of the disease is as a hemiplegia, the affinity between the two diseases (MCXLIV.) is such as to lead to the same remedies in both cases. This is certainly proper in all those cases in which we can with much probability impute the disease to compression ; and it is indeed seldom that a hemiplegia from internal causes comes on but with a considerable affection of the in-

ternal and even of the external senses, together with other marks of a compression of the origin of the nerves.

MCLIII. Not only, however, where the disease can be imputed to compression, but even where it can be imputed to the application of narcotic powers, if the disease come on with the appearances mentioned at the end of last paragraph, it is to be treated in the same manner as an apoplexy by MCXXXI.—MCXXXIX.

MCLIV. The cure of hemiplegia, therefore, on its first attack, is the same, or very nearly the same with that of apoplexy ; and it seems requisite that it should be different only, 1. When the disease has subsisted for some time ; 2. When the apoplectic symptoms, or those marking a considerable compression of the origin of the nerves, are removed ; and particularly, 3. When there are no evident marks of compression, and it is at the same time known that narcotic powers have been applied.

MCLV. In all these cases, the question arises, Whether stimulants may be employed, or how far the cure may be entirely trusted to such remedies ? Upon this question, with respect to apoplexy, I have offered my opinion in MCXXXVI. And, with respect to hemiplegia, I am of opinion, that stimulants are almost always equally dangerous as in the cases of complete apoplexy ; and particularly, 1. In all the cases of hemiplegia succeeding to a paroxysm of complete apoplexy ; 2. In all the cases coming upon persons of the temperament mentioned in MXCV. and after the same antecedents as those of apoplexy (MXCVI.) ; and, 3. In all the cases coming on with symptoms of apoplexy from compression.

MCLVI. It is, therefore, in the cases MCLIV. only, that stimulants are properly admissible : And even in the two first of these cases, in which a plethoric state of the blood vessels of the brain may have brought on the disease ; in which a disposition to that state may still continue ; and in which even some degree of congestion may still remain : the use of stimulants must be an ambiguous remedy ; so that perhaps it is in the third of these cases only that stimulants are clearly indicated and admissible.

MCLVII. These doubts with respect to the use of stimulants, may perhaps be overlooked or disregarded by those who allege that stimulants have been employed with advantage even in those cases (MCLV.) in which I have said they ought to be avoided.

MCLVIII. To compromise this contrariety of opinion, I must observe, that even in the cases of hemiplegia depending upon compression, although the origin of the nerves be so much compressed as to prevent so full a flow of the nervous power as is necessary to muscular motion, yet it appears from the power of sense still remaining, that the nerves are, to a certain degree, still pervious ; and therefore it is possible that stimulants applied, may excite the energy of the brain so much, as in some measure to force open the compressed nerves, and to show some return of motion in paralytic muscles. Nay, further, it may be allowed, that if these stimulants be such as act more upon the nervous than upon the sanguiferous system, they may possibly be employed without any very hurtful consequence.

MCLIX. But still it will be obvious, that although certain stimulants act chiefly upon the nervous system, yet they also act always in some measure upon the sanguiferous ; so that, when they happen to have the latter effect in any considerable degree, they may certainly do much harm ; and in a disease which they do not entirely cure, the mischief arising from them may not be discerned.

MCLX. Whilst the employment of stimulants is so often an ambiguous practice, we may perhaps go some length towards ascertaining the matter, by considering the nature of the several stimulants which may be employed, and some of the circumstances of their administration. With this view, therefore, I shall now mention the several stimulants that have been commonly employed, and offer some remarks upon their nature and use.

MCLXI. They are in the first place to be distinguished as external or internal. Of the first kind, we again distinguish them, as they are applied to particular parts of

the body only, or as they are more generally applied to the whole system. Of the first kind are,

1. The concentrated acids of vitriol or nitre ; involved, however, in oily or unctuous substances, which may obviate their corrosive, without destroying their stimulant power.
2. The volatile alkaline spirits, especially in their caustic state ; but involved also in oils, for the purpose just now mentioned.
3. The same volatile spirits are frequently employed by being held to the nose, when they prove a powerful stimulus to the nervous system ; but it is at the same time probable, that they may also prove a strong stimulant to the blood vessels of the brain.
4. A brine, or strong solution of sea salt.
5. The essential oils of aromatic plants, or of their parts.
6. The essential oils of turpentine, or of other such resinous substances.
7. The distilled oils of amber, or of other bituminous fossils.
8. The rectified empyreumatic oils of animal or vegetable substances.
9. Various vegetable acrids, particularly mustard.
10. The acrid matter found in several insects, particularly cantharides*.

Some of these stimulants may be either applied in substance, or may be dissolved in ardent spirits, by which their stimulant power may be increased, or more conveniently applied.

MCLXII. The greater part of the substances now enumerated show their stimulant power by inflaming the skin of the part to which they are applied ; and when their application is so long continued as to produce this effect, it interrupts the continuance of their use, and the inflammation of the part does not seem to do so much

* R. Olei Camphorat. 3 i.

Tinct. Cantharid. 3 ij. m. ft. liniment. quo pars saepius fricitur
Vel,

R. Liniment. Sapon. 3 i. fl.

Tinct. Cantharid. 3 fl. Sit Liniment. eodem modo utendum.

good as the frequent repetition of a more moderate stimulus.

MCLXIII. Analogous to these stimulants is the stinging of nettles, which has been frequently recommended.

Among the external stimulants, the mechanical one of friction with the naked hand, the fleshbrush, or flannel, is justly to be reckoned. Can the impregnation of the flannels to be employed, with the fumes of burning mastic, olibanum, &c. be of any service?

MCLXIV. With respect to the whole of these external stimulants, it is to be observed, that they affect the part to which they are applied much more than they do the whole system, and they are therefore indeed safer in ambiguous cases; but, for the same reason, they are of less efficacy in curing a general affection.

MCLXV. The external applications which may be applied to affect the whole system, are the powers of heat and cold, and of electricity.

Heat, as one of the most powerful stimulants of the animal economy, has been often employed in palsies, especially by warm bathing. But as, both by stimulating the solids and rarefying the fluids, this proves a strong stimulus to the sanguiferous system, it is often an ambiguous remedy; and has frequently been manifestly hurtful in palsies depending upon a congestion of blood in the vessels of the brain. The most certain, and therefore the most proper use of warm bathing in palsies, seems to be in those that have been occasioned by the application of narcotic powers. Are the natural baths more useful by the matters with which they may be naturally impregnated?

MCLXVI. Cold applied to the body for any length of time, is always hurtful to paralytic persons; but if it be not very intense, nor the application long continued, and if at the same time the body be capable of a brisk reaction, such an application of cold is a powerful stimulant of the whole system, and has often been useful in curing palsy. But if the power of reaction in the body be weak, any application of cold may prove very hurtful.

MCLXVII. Electricity, in a certain manner applied, is certainly one of the most powerful stimulants that can be employed to act upon the nervous system of animals ; and therefore, much has been expected from it in the cure of palsy. But, as it stimulates the sanguiferous as well as the nervous system, it has been often hurtful in palsies depending upon a compression of the brain ; and especially when it has been so applied as to act upon the vessels of the head. It is safer when its operation is confined to particular parts somewhat remote from the head ; and, further, as the operation of electricity, when very strong, can destroy the mobility of the nervous power, I am of opinion, that it is always to be employed with caution, and that it is only safe when applied with moderate force, and when confined to certain parts of the body remote from the head. It is also my opinion, that its good effects are to be expected from its repetition rather than from its force, and that it is particularly suited to the cure of those palsies, which have been produced by the application of narcotic powers.

MCLXVIII. Amongst the remedies of palsy, the use of exercise is not to be omitted. In a hemiplegia, bodily exercise cannot be employed ; and in a more limited affection, if depending upon a compression of some part of the brain, it would be an ambiguous remedy : but, in all cases where the exercises of gestation can be employed, they are proper ; as, even in cases of compression, the stimulus of such exercise is moderate, and therefore safe ; and, as it always determines to the surface of the body, it is a remedy in all cases of internal congestion.

MCLXIX. The internal stimulants employed in palsy are various, but chiefly the following.

1. The volatile alkaline salts, or spirits, as they are called, are very powerful and diffusive stimulants, operating especially on the nervous system ; and even although they operate on the sanguiferous, yet, if given in frequently repeated small, rather than in large doses, their operation being transitory, is tolerably safe.

2. The vegetables of the class named Tetrodynamia, are many of them powerful diffusive stimulants ; and at

the same time, as quickly passing out of the body, and therefore of transitory operation, they are often employed with safety. As they commonly prove diuretic, they may in this way also be of service in some cases of serous palsey.

3. The various aromatics, whether employed in substance, in tincture, or in their essential oils, are often powerful stimulants ; but being more adhesive and inflammatory than those last mentioned, they are therefore in all ambiguous cases less safe.

4. Some other acrid vegetables have been employed ; but we are not well acquainted with their peculiar virtues, or proper use.

5. Some resinous substances, as guaiacum, and the terebinthinate substances, or their essential oils, have been, with some probability, employed ; but they are apt to become inflammatory. Decoctions of guaiacum, and some other sudorifics, have been directed to excite sweating by the application of the fumes of burning spirit of wine in the laconicum, and have in that way been found useful.

6. Many of the fetid antispasmodic medicines have been frequently employed in palsey ; but I do not perceive in what manner they are adapted to the cure of this disease, and I have not observed their good effects in any cases of it.

7. Bitters, and the Peruvian bark, have also been employed ; but with no propriety or advantage that I can perceive.

MCLXX. With respect to the whole of these internal stimulants, it is to be observed, that they seldom prove very powerful ; and wherever there is any doubt concerning the nature or state of the disease, they may readily do harm, and are often therefore of ambiguous use.

BOOK II.

OF ADYNA MIAE*,

OR

DISEASES CONSISTING IN A WEAKNESS OR
LOSS OF MOTION IN EITHER THE VITAL
OR NATURAL FUNCTIONS.

C H A P. I.

OF SYNCOPE†, OR FAINTING.

MCLXXI. THIS is a disease in which the action of the heart and respiration become considerably weaker than usual, or in which, for a certain time, these functions cease altogether.

MCLXXII. Physicians having observed that this affection occurs in different degrees, have endeavored to distinguish these by different appellations ; but as it is not possible to ascertain these different degrees with any precision, so there can be no strict propriety in employing those different names, and I shall here comprehend the whole of the affections of this kind under the title of Syncope.

MCLXXIII. This disease sometimes comes on suddenly to a considerable degree, but sometimes also it comes on gradually ; and, in the latter case, it usually comes on with a sense of langor, and of anxiety about the heart,

* The involuntary motions, either vital or natural, diminished. *Syn. Nof.*

† The motion of the heart diminished, or altogether stopped. *Syn. Nof.*

accompanied at the same time, or immediately after, with some giddiness, dimness of sight, and sounding in the ears. Together with these symptoms, the pulse and respiration become weak ; and often so weak, that the pulse is scarcely to be felt, or the respiration to be perceived ; and sometimes these motions, for a certain time, cease altogether. While these symptoms take place, the face and whole surface of the body become pale, and more or less cold according to the degree and duration of the paroxysm. Very commonly, at the beginning of this, and during its continuance, a cold sweat appears, and perhaps continues on the fore head, as well as on some other parts of the body. During the paroxysm, the animal functions, both of sense and motion, are always in some degree impaired, and very often entirely suspended. A paroxysm of syncope is often, after some time, spontaneously recovered from ; and this recovery is generally attended with a sense of much anxiety about the heart.

Fits of syncope are frequently attended with or end in vomiting, and sometimes, with convulsions, or an epileptic fit.

MCLXXIV. These are the phenomena in this disease ; and from every view of the greatest part of them, there cannot be a doubt that the proximate cause of this disease is a very weak, or a total ceasing of the action of the heart. But it will be a very difficult matter to explain in what manner the several remote causes operate in producing the proximate cause. This, however, I shall attempt, though with that diffidence which becomes me in attempting a subject that has not hitherto been treated with much success.

MCLXXV. The remote causes of syncope may, in the first place, be referred to two general heads. The one is, of those causes existing and acting in the brain or in parts of the body remote from the heart, but acting upon it by the intervention of the brain. The other general head of the remote causes of syncope, is, of those existing in the heart itself, or in parts very immediately

connected with it, and thereby acting more directly upon it in producing this disease

MCLXXVI. In entering upon the consideration of the first set of those causes (MCLXXIV.), I must assume a proposition which I suppose to be fully established in Physiology. It is this : That, though the muscular fibres of the heart be endowed with a certain degree of inherent power, they are still, for such action as is necessary to the motion of the blood, very constantly dependent upon a nervous power sent into them from the brain. At least this is evident, that there are certain powers acting primarily, and perhaps only in the brain, which influence and variously modify the action of the heart. I suppose, therefore, a force very constantly during life exerted in the brain, with respect to the moving fibres of the heart, as well as of every part of the body ; which force I shall call the Energy of the Brain, and which I suppose may be, on different occasions, stronger or weaker with respect to the heart.

MCLXXVII. Admitting these propositions, it will be obvious, that if I can explain in what manner the first set of remote causes (MCLXXIV.), diminish the energy of the brain, I shall, at the same time, explain in what manner these causes occasion a syncope.

MCLXXVIII. To do this, I observe, that one of the most evident of the remote causes of syncope is a hemorrhagy, or an evacuation of blood, whether spontaneous or artificial. And as it is very manifest that the energy of the brain depends upon a certain fulness and tension of its blood vessels, for which nature seems to have industriously provided by such a conformation of those blood vessels as retards the motion of the blood both in the arteries and veins of the brain ; so we can readily perceive, that evacuations of blood, by taking off the fulness and tension of the blood vessels of the brain, and thereby diminishing its energy with respect to the heart, may occasion a syncope. In many persons, a small evacuation of blood will have this effect ; and in such cases there is often a clear proof of the manner in which the cause operates, from this circumstance, that the ef-

fect can be prevented by laying the body in a horizontal posture ; which, by favoring the afflux of the blood by the arteries, and retarding the return of it by the veins, preserves the necessary fulness of the vessels of the brain.

It is farther to be remarked here, that not only an evacuation of blood occasions syncope, but that even a change in the distribution of the blood, whereby a larger portion of it flows into one part of the system of blood vessels, and consequently less into others, may occasion a syncope. It is thus I explain the syncope that readily occurs upon the evacuation of hydroptic waters, which had before filled the cavities of the abdomen or thorax. It is thus also I explain the syncope that sometimes happens on blood letting, but which does not happen till the ligature which had been employed is untied, and admits a larger afflux of blood into the blood vessels of the arm. Both these cases of syncope show, that an evacuation of blood does not always occasion the disease by any general effect on the whole system, but often merely by taking off the requisite fulness of the blood vessels of the brain.

MCLXXIX. The operation of some others of the remote causes of syncope, may be explained on the following principles : Whilst the energy of the brain is, upon different occasions, manifestly stronger or weaker, seems to be with this condition, that a stronger exertion of it is necessarily followed by a weaker state of the same. It seems to depend upon this law in the constitution of the nervous power, that the ordinary contraction of a muscle is always alternated with a relaxation of the same ; that, unless a contraction proceeds to the degree of spasm, the contracted state cannot be long continued : and it seems to depend upon the same cause that the voluntary motions, which always require an unusual increase of exertion, occasion fatigue, debility, and at length irresistible sleep.

From this law, therefore, of the nervous power, we may understand why a sudden and violent exertion of the energy of the brain is sometimes followed by such a

diminution of it as to occasion a syncope ; and it is thus I suppose that a violent fit of joy produces syncope, and even death. It is upon the same principle also, I suppose, that an exquisite pain may sometimes excite the energy of the brain more strongly than can be supported, and is therefore followed by such a diminution as must occasion fainting. But the effect of this principle appears more clearly in this, that a fainting readily happens upon the sudden remission of a considerable pain ; and thus I have seen a fainting occur upon the reduction of a painful dislocation.

MCLXXX. It seems to be quite analogous when a syncope immediately happens on the finishing of any great and long continued effort, whether depending on the will, or upon a propensity ; and in this way a fainting sometimes happens to a woman on the bearing of a child. This may be well illustrated by observing, that in persons already much weakened, even a very moderate effort will sometimes occasion fainting.

MCLXXXI. To explain the operation of some other causes of syncope, it may be observed, that as the exertions of the energy of the brain are especially under the influence of the will, so it is well known that those modifications of the will which are named Passions and Emotions, have a powerful influence on the energy of the brain in its actions upon the heart, either in increasing or diminishing the force of that energy. Thus anger has the former, and fear the latter effect ; and thence it may be understood how terror often occasions a syncope sometimes of the most violent kind, named Asphyxia, and sometimes death itself.

MCLXXXII. As, from what I have just mentioned, it appears, that the emotions of desire increase, and those of aversion diminish the energy of the brain ; so it may be understood, how a strong aversion, a horror, or the feeling which arises upon the sight of a very disagreeable object, may occasion fainting. As an example of this, I have known more than one instance of a persons, fainting at the sight of a sore in another person.

MCLXXXII. To this head of horror and disgust, I refer the operation of those odors which in certain persons occasion syncope. It may be supposed, that those odors are endowed with a directly sedative power, and may thereby occasion syncope ; but they are, many of them, with respect to other persons, evidently of a contrary quality : and it appears to me, that those odors occasion syncope only in those persons to whom they are extremely disagreeable.

MCLXXXIV. It is however very probable, that among the causes of syncope, there are some which, analogous to all those we have already mentioned, act by a directly sedative power : and such may either be diffused in the mass of blood, and thereby communicated to the brain, or may be only taken into the stomach, which so readily and frequently communicates its affections to the brain.

MCLXXXV. Having now enumerated, and, as I hope, explained the most part of the remote causes of syncope, that either operate immediately upon the brain, or whose operation upon other parts of the body is communicated to the brain, it is proper to observe, that the most part of these causes operate upon certain persons more readily and more powerfully than upon others ; and this circumstance, which may be considered as the predisponent cause of syncope, deserves to be inquired into.

It is, in the first place, obvious, that the operation of some of those causes depends entirely upon an idiosyncrasy in the persons upon whom they operate ; which, however, I cannot pretend to explain. But, in the next place, with respect to the greater part of the other causes, their effects seem to depend upon a temperament which is in one degree or other in common to many persons. This temperament seems to consist in a great degree of sensibility and mobility, arising from a state of debility, sometimes depending upon original conformation, and sometimes produced by accidental occurrences in the course of life.

MCLXXXVI. The second set of the remote causes of syncope (MCLXXIV.), or those acting directly upon the heart itself, are certain organic affections of the heart itself, or of the parts immediately connected with it, particularly the great vessels which pour blood into, or immediately receive it from the cavities of the heart. Thus a dilatation, or aneurism of the heart, a polypus in its cavities, abscesses or ulcerations in its substance, a close adhérence of the pericardium to the surface of the heart, aneurisms of the great vessels near to the heart, polypus in these, and ossification in these or in the valves of the heart, are one or other of them conditions, which, upon dissection, have been discovered in those persons who had before labored under frequent syncope.

MCLXXXVII. It is obvious, that these conditions are all of them, either such as may, upon occasion, disturb the free and regular influx into, or the free egress of the blood from the cavities of the heart; or such as may otherwise disturb its regular action, by sometimes interrupting it, or sometimes exciting it to more violent and convulsive action. The latter is what is named the Palpitation of the heart, and it commonly occurs in the same persons who are liable to syncope.

MCLXXXVIII. It is this, as I judge, that leads us to perceive in what manner these organic affections of the heart and great vessels may occasion syncope; for it may be supposed, that the violent exertions made in palpitations may either give occasion to an alternate great relaxation (MCLXXVIII.), or to a spasmodic contraction; and in either way suspend the action of the heart, and occasion syncope. It seems to me probable, that it is a spasmodic contraction of the heart that occasions the intermission of the pulse so frequently accompanying palpitation and syncope.

MCLXXXIX. Though it frequently happens that palpitation and syncope arise, as we have said, from the organic affections above mentioned, it is proper to observe, that these diseases, even when in a violent degree, do not always depend on such causes acting directly on the

heart, but are often dependent on some of those causes which we have mentioned above as acting primarily on the brain.

M^cX^c. I have thus endeavored to give the pathology of syncope; and of the cure I can treat very shortly.

The cases of syncope depending on the second set of causes (MCLXXIV.), and fully recited in MCLXXXV., I suppose to be generally incurable; as our art, so far as I know, has not yet taught us to cure any one of those several causes of syncope (MCLXXXV.).

The cases of syncope, depending on the first set of causes (MCLXXIV.), and whose operation I have endeavored to explain in MCLXXVII. *et seq.* I hold to be generally curable, either by avoiding the several occasional causes there pointed out, or by correcting the predisponent causes (MCLXXXIV.) The latter, I think, may generally be done by correcting the debility or mobility of the system, by the means which I have already had occasion to point out in another place.

C H A P. II.

OF DYSPEPSIA*, OR INDIGESTION.

M^cX^cI. A WANT of appetite, a squeamishness, sometimes a vomiting, sudden and transient distensions of the stomach, eructations of various kinds, heartburn, pains in the region of the stomach, and a bound belly, are symptoms which frequently concur in the same person, and therefore may be presumed to depend upon one and the same proximate cause. In both views, therefore, they may be considered as forming one and the same disease, to which we have given the appellation of *Dyspepsia*, set at the head of this chapter.

* Loss of appetite, nausea, vomiting, distension of the stomach, eructation, pain in the region of the stomach, heartburn, and coliciveness; at least the concurrence of most of the above symptoms, without any other disease of the stomach or of other parts. *Sy^r.* *N.s.*

M^CXCI^I. But as this disease is also frequently a secondary and sympathetic affection, so the symptoms above mentioned are often joined with many others ; and this has given occasion to a very confused and undetermined description of it, under the general title of Nervous Diseases, or under that of Chronic Weakness. It is proper, however, to distinguish, and I apprehend the symptoms enumerated above are those essential to the idiopathic affection I am now to treat of.

M^CXCI^{II}. It is indeed to be particularly observed, that these symptoms are often truly accompanied with a certain state of mind which may be considered as a part of the idiopathic affection : but I shall take no further notice of this symptom in the present chapter, as it will be fully and more properly considered in the next, under the title of Hypochondriasis.

M^CXCI^{IV}. That there is a distinct disease attended always with the greater part of the above symptoms, is rendered very probable by this, that all these several symptoms may arise from one and the same cause ; that is, from an imbecillity, loss of tone, and weaker action in the muscular fibres of the stomach : and I conclude therefore that this imbecillity may be considered as the proximate cause of the disease I am to treat of under the name of Dyspepsia.

M^CXCI^V. The imbecillity of the stomach, and the consequent symptoms (M^CXCI.), may, however, frequently depend upon some organic affection of the stomach itself, as tumor, ulcer, or scirrhosity ; or upon some affection of other parts of the body communicated to the stomach, as in gout, amenorrhœa, and some others. In all these cases however, the dyspeptic symptoms are to be considered as secondary or sympathetic affections, to be cured only by curing the primary disease. Such secondary and sympathetic cases cannot, indeed, be treated of here : but as I presume that the imbecillity of the stomach may often take place without either any organic affection of this part, or any more primary affection in any other part, of the body ; so I suppose and expect it will appear, from the consideration of the remote causes, that the

dyspepsia, may be often an idiopathic affection, and that it is therefore properly taken into the system of methodical Nosology, and becomes the subject of our consideration here.

M^CXCVI. There can be little doubt, that, in most cases, the weaker action of the muscular fibres of the stomach, is the most frequent and chief cause of the symptoms mentioned in M^CXCV.; but I dare not maintain it to be the only cause of idiopathic dyspepsia. There is, pretty certainly, a peculiar fluid in the stomach of animals, or at least a peculiar quality in the fluids, that we know to be there, upon which the solution of the aliments taken into the stomach chiefly depends : and it is at the same time probable, that the peculiar quality of the dissolving or digesting fluids may be variously changed, or that their quantity may be, upon occasion, diminished. It is therefore sufficiently probable, that a change in the quality or quantity of these fluids may produce a considerable difference in the phenomena of digestion, and particularly may give occasion to many of the morbid appearances mentioned in M^CXCV.

M^CXCVII. This seems to be very well founded, and points out another proximate cause of dyspepsia beside that we have already assigned : But, notwithstanding this, as the peculiar nature of the digestive fluid, the changes which it may undergo, or the causes by which it may be changed, are all matters so little known, that I cannot find any practical doctrine upon any supposition with respect to them ; and as, at the same time, the imbecillity of the stomach, either as causing the change in the digestive fluid, or as being induced by that change, seems always to be present, and to have a great share in occasioning the symptoms of indigestion ; so I shall still consider the imbecillity of the stomach as the proximate and almost sole cause of dyspepsia. And I more readily admit of this manner of proceeding, as, in my opinion, the doctrine applies very fully and clearly to the explaining the whole of the practice which experience has established as the most successful in this disease.

M^{XCVIII}. Considering this, then, as the proximate cause of dyspepsia, I proceed to mention the several remote causes of this disease ; as they are such as, on different occasions, seems to produce a loss of tone in the muscular fibres of the stomach. They may, I think, be considered under two heads. The *first* is, of those which act directly and immediately upon the stomach itself : The *second* is, of those which act upon the whole body; or particular parts of it, but in consequence of which the stomach is chiefly or almost only affected.

M^{XCVIX}. Of the first kind are,

1. Certain sedative or narcotic substances taken into the stomach ; such as tea, coffee, tobacco, ardent spirits, opium, bitters, aromatics, putrids, and acescents.
2. The large and frequent drinking of warm water, or of warm watery liquids.
3. Frequent surfeit, or immoderate repletion of the stomach.
4. Frequent vomiting, whether spontaneously arising, or excited by art.
5. Very frequent spitting, or rejection of saliva.

M^C. Those causes which act upon the whole body or upon particular parts and functions of it are,

1. An indolent and sedentary life.
2. Vexation of mind, and disorderly passions of any kind.
3. Intense study, or close application to business too long continued.
4. Excess in venery.
5. Frequent intoxication ; which partly belongs to this head, partly to the former.
6. The being much exposed to moist and cold air when without exercise.

Though the disease, as proceeding from the last set of causes, may be considered as a symptomatic affection only ; yet as the affection of the stomach is generally the first, always the chief, and often the only effect which these causes produce or discover, I think the affection of the stomach may be considered as the disease to be attended to in practice ; and the more properly so, as in

many cases the general debility is only to be cured by restoring the tone of the stomach, and by remedies first applied to this organ.

MCCI. For the cure of this disease, we form three several indications ; a preservative, a palliative, and a curative.

The *first* is, to avoid or remove the remote causes just now enumerated.

The *second* is, to remove those symptoms which especially contribute to aggravate and continue the disease. And,

The *third* is, to restore the tone of the stomach ; that is, to correct or remove the proximate cause of the disease.

MCCII. The propriety and necessity of the first indication is sufficiently evident, as the continued application, or frequent repetition of those causes, must continue the disease ; may defeat the use of remedies ; or, in spite of these, may occasion the recurrence of the disease. It is commonly the neglect of this indication which renders this disease so frequently obstinate. How the indication is to be executed, will be sufficiently obvious from the consideration of the several causes : but it is proper for the practitioner to attend to this, that the execution is often exceedingly difficult, because it is not easy to engage men to break in upon established habits, or to renounce the pursuit of pleasure ; and particularly, to persuade men that these practices are truly hurtful which they have often practised with seeming impunity.

MCCIII. The symptoms of this disease which especially contribute to aggravate and continue it, and therefore require to be more immediately corrected or removed, are, *first*, the crudities of the stomach already produced by the disease, and discovered by a loss of appetite, by a sense of weight and uneasiness in the stomach, and particularly by the eructation of imperfectly digested matters.

Another symptom to be immediately corrected, is an unusual quantity, or a higher degree than usual, of acidity present in the stomach, discovered by various disor-

ders in digestion, and by other effects to be mentioned afterwards.

The *third* symptom aggravating the disease, and otherwise in itself urgent, is costiveness, and therefore constantly requiring to be relieved.

MCCIV. The *first* of these symptoms is to be relieved by exciting vomiting ; and the use of this remedy, therefore, usually and properly begins the cure of this disease. The vomiting may be excited by various means, more gentle or more violent. The former may answer the purpose of evacuating the contents of the stomach : but emetics, and vomiting, may also excite the ordinary action of the stomach ; and both, by variously agitating the system, and particularly by determining to the surface of the body, may contribute to remove the causes of the disease. But these latter effects can only be obtained by the use of emetics of the more powerful kind, such as the antimonial emetics especially are.

MCCV. The *second* symptom to be palliated, is an excess of acidity, either in quantity or quality, in the contents of the stomach. In man there is a quantity of acescent aliment almost constantly taken in, and, as I think, always undergoes an acitous fermentation in the stomach ; and it is, therefore, that in the human stomach, and in the stomachs of all animals using vegetable food, there is always found an acid present. This acid however, is generally innocent, and occasions no disorder, unless either the quantity of it is very large, or the acidity proceeds to a higher degree than usual. But, in either of these cases, the acid occasions various disorders, as flatulency, eructation, heartburn, gnawing pains of the stomach, irregular appetites and cravings, looseness, griping, emaciation, and debility. To obviate or remove these effects aggravating and continuing the disease, it is not only necessary to correct the acid present in the stomach ; but, especially as this acid proves a ferment determining and increasing the acescency of the aliments afterwards taken in, it is proper also, as soon as possible, to correct the disposition to excessive acidity.

MCCVI. The acidity present in the stomach, may be corrected by the use of alkaline salts, or absorbent earths, or by such substances containing these, which can be decomposed by the acid of the stomach. Of the alkalines, the caustic is more effectual than the mild ; and this accounts for the effects of lime water. By employing absorbents we avoid the excess of alkali, which might sometimes take place. The absorbents are different, as they form a neutral more or less laxative ; and hence the difference between magnesia alba and other absorbents. It is to be observed, that alkalines and absorbents may be employed to excess ; as, when employed in large quantity, they may deprive the animal fluids of the acid necessary to their proper composition.

MCCVII. The disposition to acidity may be obviated by avoiding acescent aliments, and using animal food little capable of acescency. This, however, cannot be long continued without corrupting the state of our blood ; and, as vegetable food cannot be entirely avoided, the excess of their acescency may, in some measure, be avoided, by choosing vegetable food the least disposed to a vinous fermentation, such as leavened bread and well fermented liquors, and, instead of fresh native acids, employing vinegar.

MCCVIII. The acid arising from acescent matters in a sound state of the stomach, does not proceed to any high degree, or is again soon involved and made to disappear ; but this does not always happen, and a more copious acidity, or a higher degree of it, may be produced, either from a change in the digestive fluids, become less fit to moderate fermentation and to cover acidity, or from their not being supplied in due quantity. How the former may be occasioned, we do not well understand ; but we can readily perceive that the latter, perhaps the former also, may proceed from a weaker action of the muscular fibres of the stomach. In certain cases, sedative passions, immediately after they arise, occasion the appearance of acidity in the stomach which did not appear before ; and the use of stimulants often corrects, or obviates an acidity that would otherwise have appeared.

From these considerations, we conclude, that the production and subsistence of acidity in the stomach, is to be especially prevented by restoring and exciting the proper action of it, by the several means to be mentioned hereafter.

MCCIX. But it is also to be further observed, that though there are certain powers in the stomach for preventing a too copious acidity, or a high degree of it, they are not however always sufficient for preventing acescency, or for covering the acidity produced ; and therefore, as long as vegetable substances remain in the stomach, their acescency may go on and increase. From hence we perceive, that a special cause of the excess of acidity may be, the too long retention of acescent matters in the stomach ; whether this may be from these matters being of more difficult solution, or from the weakness of the stomach more slowly discharging its contents into the duodenum, or from some impediment to the free evacuation of the stomach by the pylorus. The latter of these causes we are well acquainted with, in the case of a schirrhous pylorus, producing commonly the highest degree of acidity. In all the instances of this schirroosity I have met with, I have found it incurable : but the first of these causes is to be obviated by avoiding such aliments as are of difficult solution ; and the second is to be mended by the several remedies for exciting the action of the stomach, to be mentioned afterwards.

MCCX. The *third* symptom commonly accompanying dyspepsia, which requires to be immediately removed, is costiveness. There is so much connection between the several portions of the alimentary canal with respect to the peristaltic motion, that if accelerated or retarded in any one part, the other parts of it are commonly affected in the same manner. Thus, as the brisker action of the stomach must accelerate the action of the intestines, so the slower action of the intestines must in some measure retard that of the stomach. It is, therefore, of consequence to the proper action of the stomach, that the peristaltic motion of the intestines determining their contents downwards, be regularly con-

tinued ; and that all costiveness, or interruption of that determination, be avoided. This may be done by the various means of exciting the action of the intestines ; but it is to be observed here, that as every considerable evacuation of the intestines weakens their action, and is ready, therefore, to induce costiveness when the evacuation is over ; so those purgatives which produce a large evacuation, are unfit for correcting the habit of costiveness. This, therefore, should be attempted by medicines which do no more than solicit the intestines to a more ready discharge of their present contents, without either hurrying their action, or increasing the excretions made into their cavity ; either of which effects might produce a purging. There are, I think, certain medicines peculiarly proper on this occasion, as they seem to stimulate especially the great guts, and to act little on the higher parts of the intestinal canal.

MCCXI. We have thus mentioned the several means of executing our second indication ; and I proceed to the *third*, which is, as we have said, the proper curative ; and it is to restore the tone of the stomach, the loss of which we consider as the proximate cause of the disease, or at least as the chief part of it. The means of satisfying this indication we refer to two heads. One is, of those means which operate directly and chiefly on the stomach itself ; and the other is, of those means which, operating upon the whole system, have their tonic effects thereby communicated to the stomach.

MCCXII. The medicines which operate directly on the stomach, are either stimulants or tonics.

The stimulants are saline or aromatic.

The saline are acids or neutrals.

Acids of all kinds seem to have the power of stimulating the stomach, and therefore often increase appetite ; but the native acids, as liable to fermentation, may otherwise do harm, and are therefore of ambiguous use. The acids, therefore, chiefly and successfully employed, are the vitriolic muriatic, and the distilled acid of vegetables, as it is found in tar water, which are all of them antizymics.

The neutral salts answering this intention, are especially those which have the muriatic acid in their composition, though it is presumed that neutrals of all kinds have more or less of the same virtue.

MCCXIII. The aromatics, and perhaps some other acrids, certainly stimulate the stomach, as they obviate the acescency, and flatulency of vegetable food : but their stimulus is transitory ; and if frequently repeated, and taken in large quantities, they may hurt the tone of the stomach.

MCCXIV. The tonics employed to strengthen the stomach are bitters, bitters and astringents combined, and chalybeates.

Bitters are undoubtedly tonic medicines, both with respect to the stomach and the whole system : but their long continued use has been found to destroy the tone of the stomach, and of the whole system ; and, whether this is from the mere repetition of their tonic operation, or from some narcotic power joined with the tonic in them, I am uncertain.

MCCXV. Bitters and astringents combined, are, probably, more effectual tonics than either of them taken singly ; and we suppose such a combination to take place in the Peruvian bark ; which therefore proves a powerful tonic, both with respect to the stomach and to the whole system. But I have some ground to suspect, that the long continued use of this bark may, like bitters destroy both the tone of the stomach and of the whole system.

MCCXVI. Chalybeates may be employed as tonics in various forms, and in considerable quantities, with safety*. They have been often employed in the form of mineral waters, and seemingly with success : but whether this is owing to the chalybeate in the composition of these waters, or to some other circumstances attending their use, I dare not positively determine ; but the latter opinion seems to me the more probable.

* See the Formulae for Amenorrhœa.

MCCXVII. The remedies which strengthen the stomach, by being applied to the whole body, are, exercise and the application of cold.

As exercise strengthens the whole body, it must also strengthen the stomach ; but it does this also in a particular manner, by promoting perspiration, and exciting the action of the vessels on the surface of the body, which have a particular consent with the muscular fibres of the stomach. This particularly explains why the exercises of gestation, though not the most powerful in strengthening the whole system, are, however, very powerful in strengthening the stomach ; of which we have a remarkable proof in the effects of sailing. In strengthening the general system, as fatigue must be avoided, so bodily exercise is of ambiguous use ; and perhaps it is thereby, that riding on horseback has been so often found to be one of the most powerful means of strengthening the stomach, and thereby of curing dyspepsia.

MCCXVIII. The other general remedy of dyspepsia, is the application of cold : which may be in two ways ; that is, either by the application of cold air, or of cold water. It is probable, that, in the atmosphere constantly surrounding our bodies, a certain degree of cold considerably less than the temperature of our bodies themselves, is necessary to the health of the human body. Such a degree of cold seems to strengthen the vessels on the surface of the body, and therefore the muscular fibres of the stomach. But, further, it is well known, that if the body is in exercise sufficient to support such a determination to the surface, as to prevent the cold from producing an entire constriction of the pores ; a certain degree of cold in the atmosphere, with such exercise, will render the perspiration more considerable. From the sharp appetite that in such circumstances is commonly produced, we can have no doubt, that by the application of such cold, the tone of the stomach is considerably strengthened. Cold air, therefore, applied with exercise, is a most powerful tonic with respect to the stomach : and this explains why, for that purpose, no exer-

cises within doors, or in close carriages, are so useful as those in the open air.

MCCXIX. From the same reasoning, we can perceive, that, the application of cold water, or cold bathing, while it is a tonic with respect to the system in general, and especially as exciting the action of the extreme vessels, must in both respects be a powerful means of strengthening the tone of the stomach.

MCCXX. These are the remedies to be employed towards a radical cure of idiopathic dyspepsia ; and it might be, perhaps, expected here, that I should treat also of the various cases of the sympathetic disease. But it will be obvious that this cannot be properly done without treating of all the diseases of which the dyspepsia is a symptom, which cannot be proper in this place. It has been partly done already, and will be further treated of in the course of this work. In the mean time, it may be proper to observe, that there is not so much occasion for distinguishing between the idiopathic and sympathetic dyspepsia, as there is in many other cases of idiopathic and sympathetic diseases. For, as the sympathetic cases of dyspepsia are owing to a loss of tone in some other part of the system, which is from thence communicated to the stomach ; so the tone of the stomach restored, may be communicated to the part primarily affected ; and therefore the remedies of the idiopathic may be often usefully employed, and are often the remedies chiefly employed, in sympathetic dyspepsia.

MCCXXI. Another part of our business here might be to say, how some other of the urgent symptoms, beside those above mentioned, are to be palliated. On this subject, I think it is enough to say, that the symptoms chiefly requiring to be immediately relieved, are flatulency, heartburn, other kinds of pain in the region of the stomach, and vomiting.

The dyspeptic are ready to suppose that the whole of their disease consists in a flatulency. In this it will be obvious that they are mistaken ; but, although the flatulency is not to be entirely cured, but by mending the imbecillity of the stomach by the means above mentioned ;

yet the flatulent distension of the stomach may be relieved by carminatives, as they are called, or medicines that produce a discharge of wind from the stomach ; such are the various antispasmodics, of which the most effectual is the vitriolic aether.

The heartburn may be relieved by absorbents, antispasmodics, or demulcents.

The other pains of the stomach may be sometimes relieved by carminatives, but most certainly by opiates.

Vomiting is to be cured most effectually by opiates thrown by injections into the anus.

C H A P. III.

OF HYPOCHONDRIASIS, or the HYPOCHONDRIAC AFFECTION, commonly called VAPORS or LOW SPIRITS.

MCCXXII. IN certain persons there is a state of mind distinguished by a concurrence of the following circumstances : A langor, listlessness, or want of resolution and activity with respect to all undertakings ; a disposition to seriousness, sadness, and timidity ; as to all future events, an apprehension of the worst or most unhappy state of them ; and therefore, often upon slight grounds, an apprehension of great evil. Such persons are particularly attentive to the state of their own health, to every the smallest change of feeling in their bodies ; and from any unusual feeling, perhaps of the slightest kind, they apprehend great danger, and even death itself. In respect to all these feelings and apprehensions, there is commonly the most obstinate belief and persuasion.

MCCXXIII. This state of mind is the Hypochondriasis of medical writers. See Linnæi Genera Morborum, Gen. 76. Sagari Systema Symptomaticum, Class XIII. Gen. 5. The same state of mind is what has been commonly called *Vapors* and *Low Spirits*. Though the term *Vapors* may be founded on a false theory, and therefore

improper, I beg leave, for a purpose that will immediately appear, to employ it for a little here.

MCCXXIV. Vapors, then, or the state of mind described above, is, like every other state of mind, connected with a certain state of the body, which must be inquired into, in order to its being treated as a disease by the art of physic.

MCCXXV. This state of the body, however, is not very easily ascertained ; for we can perceive, that on different occasions it is very different ; vapors being combined sometimes with dyspepsia, sometimes with hysteria, and sometimes with melancholia, which are diseases seemingly depending on very different states of the body.

MCCXXVI. The combination of vapors with dyspepsia is very frequent, and in seemingly very different circumstances. It is especially these different circumstances that I would wish to ascertain ; and I remark, that they are manifestly of two different kinds. First, as the disease occurs in young persons of both sexes, in persons of a sanguine temperament, and of a lax and flacid habit. Secondly, as it occurs in elderly persons of both sexes, of a melancholic temperament, and of a firm and rigid habit.

MCCXXVII. These two different cases of the combination of vapors and dyspepsia, I consider as two distinct diseases, to be distinguished chiefly by the temperament prevailing in the persons affected.

As the dyspepsia of sanguine temperaments is often without vapors ; and as the vapors, when joined with dyspepsia in such temperaments, may be considered as perhaps always a symptom of the affection of the stomach ; so to this combination of dyspepsia and vapors, I would still apply the appellation of *dyspepsia*, and consider it as strictly the disease treated of in the preceding chapter.

But the combination of dyspepsia and vapors in melancholic temperaments, as the vapors or the turn of mind peculiar to the temperament, nearly that described above in MCCXXII., are essential circumstances of the disease : and as this turn of mind is often with few, or only slight

symptoms of dyspepsia, and even though the latter be attending, as they seem to be rather the effects of the general temperament, than of any primary or topical affection of the stomach ; I consider this combination as a very different disease from the former, and would apply to it strictly the appellation of *hypochondriasis*.

MCCXXVIII. Having thus pointed out a distinction between Dyspepsia and Hypochondriasis, I shall now, using these terms in the strict sense above mentioned, make some observations which may, I think, illustrate the subject, and more clearly and fully establish the distinction proposed.

MCCXXIX. The dyspepsia often appears early in life and is frequently much mended as life advances ; but the hypochondriasis seldom appears early in life, and more usually in more advanced years only ; and more certainly still when it has once taken place, it goes on increasing as life advances to old age.

This seems to be particularly well illustrated, by our observing the changes in the state of the mind which usually take place in the course of life. In youth, the mind is cheerful, active, rash, and moveable ; but as life advances, the mind by degrees becomes more serious, slow, cautious, and steady ; till at length, in old age, the gloomy, timid, distrustful, and obstinate state of melancholic temperaments is more exquisitely formed. In producing these changes, it is true that moral causes have a share ; but it is at the same time obvious, that the temperament of the body determines the operation of these moral causes sooner or later, and in a greater or lesser degree, to have their effects. The sanguine temperament retains longer the character of youth, while the melancholic temperament brings on more early the manners of old age.

MCCXXX. Upon the whole, it appears, that the state of the mind which attends, and especially distinguishes hypochondriasis, is the effect of that same rigidity of the solids, torpor of the nervous power, and peculiar balance between the arterial and venous systems which occur in advanced life, and which at all times take place more or

less in melancholic temperaments. If therefore there be also somewhat of a like state of mind attending that dyspepsia which occurs early in life in sanguine temperaments and lax habits, it must depend upon a different state of the body, and probably upon a weak and moveable state of the nervous power.

MCCXXXI. Agreeable to all this, in dyspepsia, there is more of spasmodic affection, and the affection of the mind (MCCXXII.) is often absent, and when present, is perhaps always of a slighter kind : while, in hypochondriasis, the affection of the mind is more constant, and the symptoms of dyspepsia, or the affections of the stomach, are often absent, or when present, are in a slighter degree.

I believe the affection of the mind is commonly different in the two diseases. In dyspepsia, it is often languor and timidity only, easily dispelled ; while in hypochondriasis, it is generally the gloomy and rivetted apprehension of evil.

The two diseases are also distinguished by some other circumstances. Dyspepsia, as I have said, is often a symptomatic affection ; while hypochondriasis is perhaps always a primary and idiopathic disease.

As debility may be induced by many different causes, dyspepsia is a frequent disease ; while hypochondriasis depending upon a peculiar temperament, is more rare.

MCCXXXII. Having thus endeavored to distinguish the two diseases, I suppose the peculiar nature and proximate cause of *hypochondriasis* will be understood ; and I proceed therefore to treat of its cure.

So far as the affections of the body, and particularly of the stomach, are the same here as in the case of *dyspepsia*, the method of cure might be supposed to be also the same ; and accordingly the practice has been carried on with little distinction : But I am persuaded that a distinction is often necessary.

MCCXXXIII. There may be a foundation here for the same preservative indication as first laid down in the cure of *dyspepsia* (MCCII.); but I cannot treat this subject so clearly or fully as I could wish, because I have not yet had so much opportunity of observation as I think nec-

essary to ascertain the remote causes ; and I can hardly make use of the observations of others, who have seldom or never distinguished between the two diseases. What indeed has been said with respect to the remote causes of *melancholia*, will often apply to the *hypochondriasis*, which I now treat of ; but the subject of the former has been so much involved in a doubtful theory, that I find it difficult to select the facts that might properly and strictly apply to the latter. I delay this subject, therefore, till another occasion ; but in the mean time trust, that what I have said regarding the nature of the disease, and some remarks I shall have occasion to offer in considering the method of cure, may in some measure supply my deficiency on this subject of the remote causes.

MCCXXXIV. The second indication laid down in the cure of dyspepsia (MCCI.) has properly a place here ; but it is still to be executed with some distinction.

MCCXXXV. An anorexia, and accumulation of crudities in the stomach, does not so commonly occur in hypochondriasis as in dyspepsia ; and therefore vomiting (MCCIV.) is not so often necessary in the former as in the latter.

MCCXXXVI. The symptom of excess of acidity, from the slow evacuation of the stomach in melancholic temperaments, often arises to a very high degree in hypochondriasis ; and therefore, for the same reason as in MCCV. it is to be obviated and corrected with the utmost care. It is upon this account that the several antacids, and the other means of obviating acidity, are to be employed in hypochondriasis, and with the same attentions and considerations as in MCCVI. and following : with this reflection, however, that the exciting the action of the stomach there mentioned, is to be a little differently understood, as shall be hereafter explained.

MCCXXXVII. As costiveness, and that commonly to a considerable degree, is a very constant attendant of hypochondriasis, so it is equally hurtful as in dyspepsia. It may be remedied by the same means in the former as in the latter, and they are to be employed with the same restrictions as in MCCX.

MCCXXXVIII. It is especially with respect to the *third* indication laid down in the cure of dyspepsia (MCCI.) that there is a difference of practice to be observed in the cure of hypochondriasis ; and that often one directly opposite to that in the case of dyspepsia, is to be followed.

MCCXXXIX. In dyspepsia, the chief remedies are the tonic medicines, which to me seem neither necessary nor safe in hypochondriasis ; for in this there is not a loss of tone, but a want of activity, that is to be remedied.

Chalybeate mineral waters have commonly been employed in hypochondriasis, and seemingly with success. But this is probably to be imputed to the amusement and exercise usually accompanying the use of these waters, rather than to the tonic power of the small quantity of iron which they contain. Perhaps the elementary water, by favoring the excretions, may have a share in relieving the disease.

MCCXL. Cold bathing is often highly useful to the dyspeptic, and as a general stimulant, may sometimes seem useful to the hypochondriac ; but it is not commonly so to the latter : while on the other hand, warm bathing, hurtful to the dyspeptic, is often extremely useful to the hypochondriac.

MCCXLI. Another instance of a contrary practice necessary in the two diseases, and illustrating their respective natures, is, that the drinking tea and coffee is always hurtful to the dyspeptic, but is commonly extremely useful to the hypochondriac.

MCCXLII. Exercise, as it strengthens the system, and thereby the stomach, and more especially, as by increasing the perspiration it excites the action of the stomach, it proves one of the most useful remedies in dyspepsia ; and further, as by increasing the perspiration, it excites the activity of the stomach, it likewise proves an useful remedy in the hypochondriasis. However, in the latter case, as I shall explain presently, it is still a more useful remedy by its operation upon the mind than by that upon the body.

MCCXLIII. It is now proper that we proceed to consider the most important article of our practice in this disease,

and which is, to consider the treatment of the mind, an affection of which sometimes attends dyspepsia, but is always the chief circumstance in hypochondriasis. What I am to suggest here, will apply to both diseases ; but it is the hypochondriasis that I am to keep most constantly in view.

MCCXLIV. The management of the mind, in hypochondriacs, is often nice and difficult. The firm persuasion that generally prevails in such patients, does not allow their feelings to be treated as imaginary, nor their apprehension of danger to be considered as groundless, though the physician may be persuaded that it is the case in both respects. Such patients, therefore, are not to be treated either by railery or by reasoning.

It is said to be the manner of hypochondriacs to change often their physician, and indeed they often do it consistently : for a physician who does not admit the reality of the disease, cannot be supposed to take much pains to cure it, or to avert the danger of which he entertains no apprehension.

If in any case the pious fraud of a placebo be allowable, it seems to be in treating hypochondriacs ; who, anxious for relief, are fond of medicines, and, though often disappointed, will still take every new drug that can be proposed to them.

MCCXLV. As it is the nature of man to indulge every present emotion, so the hypochondriac cherishes his fears, and attentive to every feeling, finds in trifles light as air a strong confirmation of his apprehensions. His cure therefore depends especially upon the interruption of his attention, or upon its being diverted to other objects than his own feelings.

MCCXLVI. Whatever aversion to application of any kind may appear in hypochondriacs, there is nothing more pernicious to them than absolute idleness, or a vacancy from all earnest pursuit. It is owing to wealth admitting of indolence, and leading to the pursuit of transitory and unsatisfying amusements, or to that of exhausting pleasures only, that the present times exhibit to us so many instances of hypochondriacism.

The occupations of business suitable to their circumstances and situation in life, if neither attended with emotion, anxiety, nor fatigue, are always to be admitted, and persisted in by hypochondriacs. But occupations upon which a man's fortune depends, and which are always, therefore, objects of anxiety to melancholic men ; and more particularly where such occupations are exposed to accidental interruptions, disappointments, and failures, it is from these that the hypochondriac is certainly to be withdrawn.

MCCXLVII. The hypochondriac who is not necessarily, by circumstances or habits engaged in business, is to be drawn from his attention to his own feelings by some amusement.

The various kinds of sport and hunting, as pursued with some ardor, and attended with exercise if not too violent, are amongst the most useful.

All those amusements which are in the open air, joined with moderate exercise, and requiring some dexterity, are generally of use.

Within doors, company which engages attention, which is willingly yielded to, and is at the same time of a cheerful kind, will be always found of great service.

Play, in which some skill is required, and where the stake is not an object of much anxiety, if not too long protracted, may often be admitted.

In dyspeptics, however, gaming, liable to sudden and considerable emotions, is dangerous ; and the long continuance of it, with night watching, is violently debilitating. But in melancholics, who commonly excel in skill and are less susceptible of violent emotions, it is more admissible, and is often the only amusement that can engage them.

Music, to a nice ear, is a hazardous amusement, as long attention to it is very fatiguing.

MCCXLVIII. It frequently happens, that amusements of every kind are rejected by hypochondriacs ; and in that case, mechanical means of interrupting thought are the remedies to be sought for.

Such is to be found in brisk exercise, which requires some attention in the conduct of it.

Walking is seldom of this kind ; though, as gratifying to the restlessness of hypochondriacs, it has sometimes been found useful.

The required interruption of thought is best obtained by riding on horseback, or in driving a carriage of any kind.

The exercise of sailing, except it be in an open boat engaging some attention, does very little service.

Exercise in an easy carriage, in the direction of which the traveller takes no part, unless it be upon rough roads, or driven pretty quickly, and with long continuance, is of little advantage.

MCCXLIX. Whatever exercise may be employed, it will be most effectual when employed in the pursuit of a journey ; first, because it withdraws a person from many objects of uneasiness and care which might present themselves at home ; secondly, as it engages in more constant exercise, and in a greater degree of it than is commonly taken in airings about home ; and, lastly, as it is constantly presenting new objects which call forth a person's attention.

MCCL. In our system of Nosology, we have, next to Hypochondriasis, placed the Chlorosis, because I once thought it might be considered as a genus, comprehending, besides the Chlorosis of Amenorrhœa, some species of Cachexy : but, as I cannot find this to be well founded, and cannot distinctly point out any such disease, I now omit considering Chlorosis as a genus here ; and as a symptom of Amenorrhœa, I have endeavored before to explain it under that title.

BOOK III.
OF
SPASMODIC AFFECTIONS.
WITHOUT FEVER.

INTRODUCTION.

MCCLI. UNDER this title I am to comprehend all the diseases which consist in *motu abnormi*; that is, in a preternatural state of the contraction and motion of the muscular or moving fibres in any part of the body.

MCCLII. It will hence appear, why, under this title, I have comprehended many more diseases than Sauvages and Sagar have comprehended under the title of Spasmi, or than Linnæus has done under the title of Motrii. But I expect it will be obvious, that, upon this occasion, it would not be proper to confine our view to the affections of voluntary motion only; and if those Nosologists have introduced into the class of Spasmi, Palpitatio and Hysteria, it will be, with equal propriety, that asthma, Cholica, and many other diseases, are admitted.

MCCLIII. It has been hitherto the method of our Nosologists to divide the Spasmi into the two orders of Tonici and Clonici, Spastici, and Agitatorii; or, as many at present use the terms, into Spasms strictly so called, and Convulsions. I find however, that many, and indeed most of the diseases to be considered under our title of Spasmodic Affections, in respect of Tonic or Clonic contractions, are of a mixed kind: and therefore, I cannot follow the usual general division; but have attempted another, by arranging the several Spasmodic Diseases ac-

cording as they affect the several functions, Animal, Vital, or Natural.

S E C T. I.

Of the spasmodic Affections of the Animal Functions.

MCCLIV. Agreeable to the language of the ancients, the whole of the diseases to be treated of in this section might be termed *Spasmi*; and many of the moderns continue to apply the term in the same manner: but I think it convenient to distinguish the terms of *Spasm* and *Convulsion*, by applying the former, strictly to what has been called the *Tonic*, and the latter, to what has been called the *Clonic Spasm*. There is certainly a foundation for the use of those different terms, as there is a remarkable difference in the state of the contraction of moving fibres upon different occasions. This I have indeed pointed out before in my treatise of Physiology, but must also repeat it here.

MCCLV. In the exercise of the several functions of the animal economy, the contractions of the moving fibres are excited by the will, or by certain other causes specially appointed by nature for exciting those contractions; and these other causes I name the *natural causes*. In a state of health the moving fibres are contracted by the power of the will, and by the *natural causes* only. At the same time, the contractions produced are in force and velocity regulated by the will, or by the circumstances of the natural causes; and the contractions, whether produced by the one or the other, are always soon succeeded by a state of relaxation, and are not repeated but when the power of the will or of the natural causes is again applied.

MCCLVI. Such are the conditions of the action of the moving fibres in a state of health; but in a morbid state, the contractions of the muscles and moving fibres ordinarily depending upon the will, are excited without the concurrence of the will, or contrary to what the will intends; and in the other functions they are excited by

the action of unusual and unnatural causes. In both cases, the contractions produced may be in two different states. The one is, when the contractions are to a more violent degree than is usual in health, and are neither succeeded by a spontaneous relaxation, nor even readily yield to an extension either from the action of antagonist muscles, or from other extending powers applied. This state of contractions is what has been called a *Tonic Spasm*, and is what I shall name simply and strictly a *Spasm*. The other morbid state of contractions is, when they are succeeded by a relaxation, but are immediately again repeated without the concurrence of the will or of the repetition of natural causes, and are at the same time commonly, with respect to velocity and force, more violent than in a healthy state. This state of morbid contraction is what has been named a *Clonic Spasm*, and what I shall name simply and strictly a *Convulsion*.

In this section I shall follow nearly the usual division of the spasmodic diseases, into those consisting in Spasm, and those consisting in Convulsion ; but it may not perhaps be in my power to follow such division exactly.



C H A P. I.

OF TETANUS*.

MCLVII. BOTH NOSOLOGISTS and Practical Writers have distinguished Tetanic complaints into the several species of Tetanus, Opisthotonus, and Emprosthotonus ; and I have in my Nosology put the Trismus, or Locked Jaw, as a genus distinct from the Tetanus. All this, however, I now judge to be improper ; and am of opinion, that all the several terms mentioned, denote and are applicable only to different degrees of one and the same disease ; the history and cure of which I shall endeavor to deliver in this chapter.

* A spastic rigidity of several muscles. *Syn.* *Nos.*

MCCLVIII. Tetanic complaints may, from certain causes, occur in every climate that we are acquainted with ; but they occur most frequently in the warmest climates, and most commonly in the warmest seasons of such climates. These complaints affect all ages, sexes, temperaments, and complexions. The causes from whence they commonly proceed, are cold and moisture applied to the body while it is very warm, and especially the sudden vicissitudes of heat and cold. Or, the disease is produced by punctures, lacerations, or other lesions of nerves in any part of the body. There are, probably, some other causes of this disease ; but they are neither distinctly known, nor well ascertained. Though the causes mentioned do, upon occasion, affect all sorts of persons, they seem however to attack persons of middle age more frequently than the older or younger, the male sex more frequently than the female, and the robust and vigorous more frequently than the weaker.

MCCLIX. If the disease proceed from cold, it commonly comes on in a few days after the application of such cold ; but, if it arise from a puncture or other lesion of a nerve, the disease does not commonly come on for many days after the lesion has happened, very often when there is neither pain nor uneasiness remaining in the wounded or hurt part, and very frequently when the wound has been entirely healed up.

MCCLX. The disease sometimes comes on suddenly to a violent degree, but more generally it approaches by slow degrees to its violent state. In this case it comes on with a sense of stiffness in the back part of the neck, which, gradually increasing, renders the motion of the head difficult and painful. As the rigidity of the neck comes on and increases, there is commonly at the same time a sense of uneasiness felt about the root of the tongue ; which, by degrees, becomes a difficulty of swallowing, and at length an entire interruption of it. While the rigidity of the neck goes on increasing, there arises a pain, often violent, at the lower end of the sternum, and from thence shooting into the back. When this pain arises, all the muscles of the neck, and particularly those

of the back part of it, are immediately affected with spasm, pulling the head strongly backwards. At the same time, the muscles that pull up the lower jaw, which upon the first approaches of the disease were affected with some spastic rigidity, are now generally affected with more violent spasm, and set the teeth so closely together, that they do not admit of the smallest opening.

This is what has been named the *Locked Jaw*, and is often the principal part of the disease. When the disease has advanced thus far, the pain at the bottom of the sternum returns very frequently, and with it the spasms of the hind neck and lower jaw, are renewed with violence and much pain. As the disease thus proceeds, a greater number of muscles come to be affected with spasms. After those of the neck, those along the whole of the spine become affected, bending the trunk of the body strongly backwards ; and this is what has been named the *Opisthotonus*.

In the lower extremities, both the flexor and extensor muscles are commonly at the same time affected, and keep the limbs rigidly extended. Though the extensors of the head and back are usually the most strongly affected, yet the flexors, or those muscles of the neck that pull the head forward, and the muscles that should pull down the lower jaw, are often at the same time strongly affected with spasm. During the whole of the disease, the abdominal muscles are violently affected with spasms, so that the belly is strongly retracted, and feels hard as a piece of board.

At length the flexors of the head and trunk become so strongly affected as to balance the extensors, and to keep the head and trunk straight, and rigidly extended, incapable of being moved in any way ; and it is to this state the term of *Tetanus* has been strictly applied. At the same time, the arms, little affected before, are now rigidly extended ; the whole of the muscles belonging to them being affected with spasms, except those that move the fingers, which often to the last retain some mobility. The tongue also long retains its mobility ; but at length it also becomes affected with spasms, which attacking cer-

tain of its muscles only, often thrust it violently out between the teeth.

At the height of the disease, every organ of voluntary motion seems to be affected ; and amongst the rest, the muscles of the face. The forehead is drawn up into furrows ; the eyes, sometimes distorted, are commonly rigid, and immoveable in their sockets ; the nose is drawn up, and the cheeks are drawn backwards towards the ears, so that the whole countenance expresses the most violent grinning. Under these universal spasms, a violent convulsion commonly comes on, and puts an end to life.

MCCLXI. These spasms are every where attended with most violent pains. The utmost violence of spasm is, however, not constant ; but after subsisting for a minute or two, the muscles admit of some remission of their contraction, although of no such relaxation as can allow the action of their antagonists. This remission of contraction gives also some remission of pain ; but neither are of long duration. From time to time, the violent contractions and pains are renewed sometimes every ten or fifteen minutes, and that often without any evident exciting cause. But such exciting causes frequently occur ; for almost every attempt to motion, as attempting a change of posture, endeavoring to swallow, and even to speak, sometimes gives occasion to a renewal of the spasms over the whole body.

MCCLXII. The attacks of this disease are seldom attended with any fever. When the spasms are general and violent, the pulse is contracted, hurried, and irregular ; and the respiration is affected in like manner : but, during the remission, both the pulse and respiration usually return to their natural state. The heat of the body is commonly not increased ; frequently the face is pale, with a cold sweat upon it ; and very often the extremities are cold, with a cold sweat over the whole body. When, however, the spasms are frequent and violent, the pulse is sometimes more full and frequent than natural ; the face is flushed, and a warm sweat is forced out over the whole body.

MCCCLXIII. Although fever be not a constant attendant of this disease, especially when arising from a lesion of nerves ; yet, in those cases proceeding from cold, a fever sometimes has supervened, and is said to have been attended with inflammatory symptoms. Blood has been often drawn in this disease, but it never exhibits any inflammatory crust ; and all accounts seem to agree, that the blood drawn seems to be of a looser texture than ordinary, and that it does not coagulate in the usual manner.

MCCCLXIV. In this disease the head is seldom affected with delirium, or even confusion of thought, till the last stage of it; when, by the repeated shocks of a violent distemper, every function of the system is greatly disordered.

MCCCLXV. It is no less extraordinary, that, in this violent disease, the natural functions are not either immediately or considerably affected. Vomitings sometimes appear early in the disease, but commonly they are not continued ; and it is usual enough for the appetite of hunger to remain through the whole course of the disease ; and what food happens to be taken down, seems to be regularly enough digested. The excretions are sometimes affected, but not always. The urine is sometimes suppressed, or is voided with difficulty and pain. The belly is costive : but, as we have hardly any accounts, excepting of those cases in which opiates have been largely employed, it is uncertain whether the costiveness has been the effect of the opiates or of the disease. In several instances of this disease, a miliary eruption has appeared upon the skin ; but whether this be a symptom of the disease, or the effect of a certain treatment of it, is undetermined. In the mean while, it has not been observed to denote either safety or danger, or to have any effect in changing the course of the distemper.

MCCCLXVI. This disease has generally proved fatal ; and this indeed may be justly supposed to be the consequence of its nature : but as we know that, till very lately, physicians were not well acquainted with a proper method of cure ; and that, since a more proper

method has been known and practised, many have recovered from this disease ; it may be therefore concluded, that the fatal tendency of it is not so unavoidable as has been imagined.

In judging of the tendency of this disease, in particular cases, we may remark, that, when arising from lesions of the nerves, it is commonly more violent, and of more difficult cure, than when proceeding from cold ; that the disease which comes on suddenly, and advances quickly to a violent degree, is always more dangerous than that which is slower in its progress. Accordingly, the disease often proves fatal before the fourth day ; and, when a patient has passed this period, he may be supposed to be in great safety, and in general the disease is the safer the longer it has continued. It is, however, to be particularly observed, that even for many days after the fourth, the disease continues to be dangerous ; and, even after some considerable abatement of its force, it is ready to recur again with its former violence and danger. It never admits of any sudden, or what may be called a critical solution, but always recedes by degrees only, and it is often very long before the whole of the symptoms disappear.

MCC LXVII. From the history of the disease now described, it will be evident, that there is no room for distinguishing the *tetanus*, *opisthotonus*, and *trismus* or *locked jaw*, as different species of this disease, since they all arise from the same causes, and are almost constantly conjoined in the same person. I have no doubt that the *emprosthotonus* belongs also to the same genus ; and as the ancients have frequently mentioned it, we can have no doubt of its having occurred : but, at the same time, it is certainly in these days a rare occurrence ; and, as I have never seen it, nor find any histories in which this particular state of the spasms is said to have prevailed, I cannot mention the other circumstances which particularly attend it, and may distinguish it from the other varieties of tetanic complaints.

MCC LXVIII. This disease has put on still a different form from any of those above mentioned. The spasms have

been sometimes confined to one side of the body only, and which bend it strongly to that side. This is what has been named by Sauvages the *Tetanus Lateralis*, and by some late writers the *Pleurostethonos*. This form of the disease has certainly appeared very seldom ; and, in any of the accounts given of it, I cannot find any circumstances that would lead me to consider it as any other than a variety of the species already mentioned, or to take further notice of it here.

MCCCLXIX. The pathology of this disease I cannot in any measure attempt, as the structure of moving fibres, the state of them under different degrees of contraction, and particularly the state of the sensorium, as variously determining the motion of the nervous power, are all matters very imperfectly, or not at all known to me. In such a situation, therefore, the endeavoring to give any rules of practice upon a scientific plan, appears to me vain and fruitless ; and towards directing the cure of this disease, we must be satisfied with having learned something useful from analogy, confirmed by experience.

MCCCLXX. When the disease is known to arise from the lesion of a nerve in any part of the body, the first, and, as I judge, the most important step to be taken towards the cure, is, by every possible means to cut off that part from all communication with the sensorium, either by cutting through the nerves in their course, or perhaps by destroying, to a certain length, their affected part or extremity.

MCCCLXXI. When the cure of the disease is to be attempted by medicine, experience has taught us that opium has often proved an effectual remedy ; but that, to render it such, it must be given in much larger quantities than have been employed in any other case ; and in these larger quantities, it may, in this disease, be given more safely than the body has been known to bear in any other condition. The practice has been, to give the opium either in a solid or a liquid form, not in any very large dose at once, but in moderate doses, frequently repeated, at the interval of one, two, three, or more

hours, as the violence of the symptoms seems to require. Even when large quantities have been given in this way, it appears that the opium does not operate here in the same manner as in most other cases ; for, though it procure some remission of the spasms and pains, it hardly induces any sleep, or occasions that stupor, intoxication, or delirium, which it often does in other circumstances, when much smaller quantities only have been given. It is therefore very properly observed, that, in tetanic affections, as the opium shows none of those effects by which it may endanger life, there is little or no reason for being sparing in the exhibition of it ; and it may be given, probably should be given, as largely and as fast as the symptoms of the disease may seem to demand.

It is particularly to be observed, that though the first exhibitions of the opium may have produced some remission of the symptoms, yet the effects of opium do not long continue in the system ; and this disease being for some time ready to recur, it is commonly very necessary by the time that the effects of the opium given may be supposed to be wearing off, and especially upon the least appearance of a return of the spasms, to repeat the exhibition of the opium in the same quantities as before. This practice is to be continued while the disease continues to show any disposition to return ; and it is only after the disease has already subsisted for some time, and when considerable and long continued remissions have taken place, that the doses of the opium may be diminished, and the intervals of exhibiting them be more considerable.

MCCLXXXII. The administering of opium in this manner has in many cases been successful ; and probably would have been equally so in many others, if the opium had not been too sparingly employed, either from the timidity of practitioners, or from its exhibition being prevented by that interruption of deglutition which so often attends this disease. This latter circumstance directs, that the medicine should be immediately and largely employed upon the first approach of the disease, before the deglutition becomes difficult ; or that if this opportunity be

lost, the medicine, in sufficient quantity, and with due frequency, should be thrown into the body by glyster ; which, however, does not seem to have been hitherto often practised.

MCCLXXXIII. It is highly probable, that in this disease, the intestines are affected with the spasm that prevails so much in other parts of the system ; and, therefore, that costiveness occurs here as a symptom of the disease. It is probably also increased by the opium, which is here so largely employed ; and, from whichever of these causes it arises, it certainly must be held to aggravate the disease and that a relaxation of the intestinal canal will contribute to a relaxation of the spasms elsewhere. This consideration directs the frequent exhibition of laxatives while the power of deglutition remains, or the frequent exhibition of glysters when it does not ; and the good effects of both have been frequently observed.

MCCLXXXIV. It has been with some probability supposed, that the operation of opium in this disease, may be much assisted by joining with it some other of the most powerful antispasmodics. The most promising are musk and camphire ; and some practitioners have been of opinion, that the former has proved very useful in tetanic complaints. But, whether it be from its not having been employed of a genuine kind, or in sufficient quantity, the great advantage and propriety of its use are not yet clearly ascertained. It appears to me probable, that analogous to what happens with respect to opium, both musk and camphire might be employed in this disease, in much larger quantities than they commonly have been in other cases.

MCCLXXXV. Warm bathing has been commonly employed as a remedy in this disease, and often with advantage ; but, so far as I know, it has not alone proved a cure ; and, in some cases, whether it be from the motion of the body here required, exciting the spasms, or from the fear of the bath, which some persons were seized with I cannot determine ; but it is allowed, that the warm bath hath in some cases done harm, and even occasioned death. Partial fomentations have been much commended, and, I believe, upon good grounds : And I

have no doubt but that fomentations of the feet and legs, as we now usually apply them in fevers, might, without much stirring of the patient, be very assiduously employed with advantage.

MCCCLXXVI. Unctuous applications were very frequently employed in this disease by the ancients : and some modern practitioners have considered them as very useful. Their effects, however, have not appeared to be considerable ; and, as a weak auxiliary only, attended with some inconvenience, they have been very much neglected by the British practitioners.

MCCCLXXVII. Bleeding has been formerly employed in this disease ; but of late it has been found prejudicial, excepting in a few cases, where, in plethoric habits, a fever has supervened. In general, the state of mens' bodies in warm climates is unfavorable to blood letting : and, if we may form indications from the state of the blood drawn out of the veins, the slate of this in tetanic diseases would forbid bleeding in them.

MCCCLXXVIII. Blistering, also, has been formerly employed in this disease ; but several practitioners assert, that blisters are constantly hurtful, and they are now generally oinitted.

MCCCLXXIX. These are the practices that hitherto have been generally employed ; but of late we are informed by several West India practitioners, that in many instances they have employed mercury with great advantage. We are told, that it must be employed early in the disease ; that it is most conveniently administered by unction, and should be applied in that way in large quantities, so that the body may be soon filled with it, and a salivation raised, which is to be continued till the symptoms yield. Whether this method alone be generally sufficient for the cure of the disease, or if it may be assisted by the use of opium, and require this in a certain measure to be joined with it, I have not yet certainly learned.

MCCCLXXX. I have been further informed, that the Tetanus, in all its different degrees, has been cured by giving internally the Pisselæum Barbadense, or, as it is vulgarly called, the Barbadoes Tar. I think it proper to

take notice of this here, although I am not exactly informed what quantities of this medicine are to be given, or in what circumstances of the disease it is most properly to be employed.

MCCLXXX. In the former edition of this work, among the remedies of tetanus I did not mention the use of cold bathing; because, though I had heard of this, I was not informed of such frequent employment of it as might confirm my opinion of its general efficacy; nor was I sufficiently informed of the ordinary and proper administration of it. But now, from the information of many judicious practitioners who have frequently employed it, I can say that it is a remedy which in numerous trials has been found to be of great service in this disease; and that, while the use of the ambiguous remedy of warm bathing is entirely laid aside, the use of cold bathing is over the whole of the West Indies commonly employed. The administration of it is sometimes by bathing the person in the sea, or more frequently by throwing cold water from a basin or bucket upon the patient's body, and over the whole of it: when this is done, the body is carefully wiped dry, wrapped in blankets, and laid a bed, and at the same time a large dose of an opiate is given. By these means a considerable remission of the symptoms is obtained; but this remission, at first, does not commonly remain long, but returning again in a few hours, the repetition both of the bathing and the opiate becomes necessary. By these repetitions, however, longer intervals of ease are obtained, and at length the disease is entirely cured; and this even happens sometimes very quickly. I have only to add, that it does not appear to me, from any accounts I have yet had, that the cold bathing has been so frequently employed, or has been found so commonly successful in the cases of tetanus in consequence of wounds, as in those from the application of cold.

MCCLXXXI. Before concluding this chapter, it is proper for me to take some notice of that peculiar case of the tetanus, or trismus, which attacks certain infants soon after their birth, and has been properly enough named

the Trismus Nascentium. From the subjects it affects, it seems to be a peculiar disease : for these are infants not above two weeks, and commonly before they are nine days old ; insomuch that, in countries where the disease is frequent, if children pass the period now mentioned, they are considered as secure against its attacks. The symptom of it chiefly taken notice of is the trismus, or locked jaw, which is by the vulgar improperly named the Falling of the Jaw. But this is not the only symptom, as, for the most part, it has all the same symptoms as the Opisthotonus and Tetanus strictly so called, and which occur in the other varieties of tetanic complaints above described. Like the other varieties of tetanus, this is most frequent in warm climates ; but is not, like those arising from the application of cold, entirely confined to such warm climates, as instances of it have occurred in most of the northern countries of Europe. In these latter it seems to be more frequent in certain districts than in others ; but in what manner limited, I cannot determine. It seems to be more frequent in Switzerland than in France. I am informed of its frequently occurring in the Highlands of Scotland ; But I have never met with any instance of it in the low country. The particular causes of it are not well known ; and various conjectures have been offered ; but none of them are satisfying. It is a disease that has been almost constantly fatal ; and this, also, commonly in the course of a few days. The women are so much persuaded of its inevitable fatality, that they seldom or never call for the assistance of our art. This has occasioned our being little acquainted with the history of the disease, or with the effects of remedies in it. Analogy, however, would lead us to employ the same remedies that have proved useful in the other cases of tetanus ; and the few experiments that are yet recorded, seem to approve of such a practice,

C H A P. II.

OF EPILEPSY*.

MCCXXXII. IN what sense I use the term *Convulsion*, I have explained above in MCCLVI.

The convulsions that affect the human body are in several respects various ; but I am to consider here only the chief and most frequent form in which they appear, and which is in the disease named *Epilepsy*. This may be defined, as consisting in convulsions of the greater part of the muscles of voluntary motion, attended with a loss of sense, and ending in a state of insensibility, and seeming sleep.

MCCLXXXIII. The general form or principal circumstances of this disease, are much the same in all the different persons whom it effects. It comes by fits, which often attack persons seemingly in perfect health ; and, after lasting for some time, pass off, and leave the persons again in their usual state. These fits are sometimes preceded by certain symptoms, which, to persons who have before experienced such a fit, may give notice of its approach, as we shall hereafter explain ; but even these preludes do not commonly occur long before the formal attack, which in most cases comes on suddenly without any such warning.

The person attacked loses suddenly all sense and power of motion ; so that, if standing, he falls immediately, or perhaps, with convulsions, is thrown to the ground. In that situation he is agitated with violent convulsions, variously moving his limbs and the trunk of his body. Commonly the limbs on one side of the body, are more violently or more considerably agitated than those upon

* Convulsion of the muscles, accompanied with sopor.

Spec. 1. Epilepsy (*cerebralis*) attacking suddenly, without any manifest cause, and without any preceding unpleasant sensation, unless a slight giddiness or transitory imperfection of vision.

Spec. 2. Epilepsy (*sympathica*) without any obvious cause, but the sense of an *aura* gradually rising from some part of the body to the head.

Spec. 3. Epilepsy (*occasionalis*) arising from a manifest irritation, and ceasing on its removal. *Syn. Nof.*

the other. In all cases the muscles of the face and eyes are much affected, exhibiting various and violent distortions of the countenance. The tongue is often affected, and thrust out of the mouth ; while the muscles of the lower jaw are also affected ; and, shutting the mouth with violence while the tongue is thrust out between the teeth, that is often grievously wounded.

While these convulsions continue, there is commonly at the same time a frothy moisture issuing from the mouth. These convulsions have for some moments some remissions, but are suddenly again renewed with great violence. Generally, after no long time, the convulsions cease altogether ; and the person for some time remains without motion, but in a state of absolute insensibility, and under the appearance of a profound sleep. After some continuance of this seeming sleep, the person sometimes suddenly, but for the most part by degrees only, recovers his senses and power of motion ; but without any memory of what had passed from his being first seized with the fit. During the convulsions, the pulse and respiration are hurried and irregular ; but, when the convulsions cease, they return to their usual regularity and healthy state.

This is the general form of the disease ; and it varies only in different persons, or on different occasions in the same person, by the phenomena mentioned being more or less violent, or by their being of longer or shorter duration.

MCCCLXXXIV. With respect to the proximate cause of this disease, I might say, that it is an affection of the energy of the brain, which, ordinarily under the direction of the will, is here, without any concurrence of it, impelled by preternatural causes. But I could go no further : For, as to what is the mechanical condition of the brain in the ordinary exertions of the will, I have no distinct knowledge ; and therefore must be also ignorant of the preternatural state of the same energy of the brain under the irregular motions here produced. To form therefore, the indications of a cure, from a knowledge of the proximate cause of this disease, I must not attempt ;

but from a diligent attention to the remote causes which first induce and occasionally excite the disease, I think we may often obtain some useful directions for its cure. It shall therefore be my business now, to point out and enumerate these remote causes as well as I can.

MCCCLXXXV. The remote causes of epilepsy may be considered as occasional or predisponent. There are indeed, certain remote causes which act independently of any predisposition ; but, as we cannot always distinguish these from the others, I shall consider the whole under the usual titles of *Occasional* or *Predisponent*.

MCCCLXXXVI. The occasional causes may, I think, be properly referred to two general heads ; the *first* being of those which seem to act by directly stimulating and exciting the energy of the brain ; and the *second*, of those which seem to act by weakening the same. With respect to both, for the brevity of expressing a fact, without meaning to explain the manner in which it is brought about, I shall use the terms of *Excitement* and *Collapse*. And though it be true, that with respect to some of the causes I am to mention, it may be a little uncertain whether they act in the one way or the other, that does not render it improper for us to mark, with respect to others, the mode of their operating, wherever we can do it clearly, as the doing so may often be of use in directing our practice.

MCCCLXXXVII. First, then, of the occasional causes acting by excitement : They are either such as act immediately and directly upon the brain itself ; or those which are first applied to the other parts of the body, and are from thence communicated to the brain.

MCCCLXXXVIII. The causes of excitement immediately and directly applied to the brain, may be referred to the four heads of, 1. Mechanical Stimulants ; 2. Chemical Stimulants ; 3. Mental Stimulants ; and, 4. The peculiar Stimulus of over distension.

MCCCLXXXIX. The mechanical stimulants may be, wounding instruments penetrating the cranium, and entering the substance of the brain ; or splinters of a fractured cranium, operating in the same manner ; or sharp point-

ed ossifications, either arising from the internal surface of the cranium, or formed in the membranes of the brain.

MCCXC. The chemical stimulants (MCCLXXXVIII.) may be fluids from various causes lodged in certain parts of the brain, and become acrid by stagnation or otherwise.

MCCXCI. The mental irritations acting by excitement, are, all violent emotions of the active kind, such as joy and anger. The first of these is manifestly an exciting power, acting strongly, and immediately, on the energy of the brain. The second is manifestly, also, a power acting in the same manner. But it must be remarked, that it is not in this manner alone anger produces its effects : for it acts, also, strongly on the sanguiferous system, and may be a means of giving the stimulus of over distension ; as, under a fit of anger, the blood is impelled into the vessels of the head with violence, and in a larger quantity.

MCCXCII. Under the head of Mental Irritations, is to be mentioned, the sight of persons in a fit of epilepsy, which has often produced a fit of the like kind in the spectator. It may, indeed, be a question, Whether this effect be imputable to the horror produced by a sight of the seemingly painful agitations of the limbs, and of the distortions in the countenance of the epileptic person ; or if it may be ascribed to the force of imitation merely ? It is possible, that horror may sometimes produce the effect : but certainly much may be imputed to that propensity to imitation, at all times so powerful and prevalent in human nature ; and so often operating in other cases of convulsive disorders, which do not present any spectacle of horror.

MCCXCIII. Under the same head of Mental Irritation, I think proper to mention as an instance of it, the Epilepsia Simulata, or the Feigned Epilepsy, so often taken notice of. Although this, at first, may be entirely feigned, I have no doubt but that the repetition renders it at length real. The history of Quietism and of Exorcisms leads me to this opinion ; and which receives a confirmation

from what we know of the power of imagination, in renewing epileptic and hysterical fits.

MCCXCIV. I come now to the fourth head of the irritations applied immediately to the brain and which I apprehend to be that of the Over distension of the blood vessels in that organ. That such a cause operates in producing epilepsy, is probable from this, that the dissection of persons dead of epilepsy, has commonly discovered the marks of a previous congestion in the blood vessels of the brain. This, perhaps, may be supposed the effect of the fit which proved fatal : but that the congestion was previous thereto, is probable from the epilepsy being so often joined with headache, mania, palsey, and apoplexy ; all of them diseases depending upon a congestion in the vessels of the brain. The general opinion receives also confirmation from this circumstance, that in the brain of persons dead of epilepsy, there have been often found tumors and effusions, which, though seemingly not sufficient to produce those diseases which depend on the compression of a considerable portion of the brain, may however, have been sufficient to compress so many vessels as to render the others, upon any occasion, of a more than usual turgescence, or impulse of the blood into the vessels of the brain more liable to an over distention.

MCCXCV. These considerations alone might afford foundation for a probable conjecture with respect to the effects of over distension. But the opinion does not rest upon conjecture alone. That it is also founded in fact, appears from hence, that a plethoric state is favorable to epilepsy ; and that every occasional turgescence, or unusual impulse of the blood into the vessels of the brain, such as a fit of anger, the heat of the sun, or of a warm chamber, violent exercise, a surfeit, or a fit of intoxication, are frequently the immediately exciting causes of epileptic fits.

MCCXCVI. I venture to remark further, that a piece of theory may be admitted as a confirmation of this doctrine. As I have formerly maintained, that a certain fulness and tension of the vessels of the brain, is necessary to the support of its ordinary and constant energy, in

the distribution of the nervous power ; so it must be sufficiently probable, that an over distension of these blood vessels may be a cause of violent excitement.

MCCXCVII. We have now enumerated the several remote or occasional causes of epilepsy, acting by excitement, and acting immediately upon the brain itself. Of the causes acting by excitement, but acting upon other parts of the body, and from thence communicated to the brain, they are all of them impressions producing an exquisite or high degree either of pleasure or pain.

Impressions which produce neither the one nor the other, have hardly any such effects ; unless when such impressions are in a violent degree, and then their operation may be considered as a mode of pain. It is, however, to be remarked, that all strong impressions which are sudden and surprising, or, in other words, unforeseen and unexpected, have frequently the effect of bringing on epileptic fits.

MCCXCVIII. There are certain impressions made upon different parts of the body, which as they often operate without producing any sensation, so it is uncertain to what head they belong : but it is probable that the greater part of them act by excitement, and therefore fall to be mentioned here. The chief instances are, The teething of infants ; worms ; acidity or other acrimony in the alimentary canal ; calculi in the kidneys ; acrid matter in abscesses or ulcers ; or acrimony diffused in the mass of blood, as in the case of some contagions.

MCCXCIX. Physicians have found no difficulty in comprehending how direct stimulants, of a certain force, may excite the action of the brain, and occasion epilepsy ; but they have hitherto taken little notice of certain causes which manifestly weaken the energy of the brain, and act as I speak, by collapse. These however, have the effect of exciting the action of the brain in such a manner as to occasion epilepsy. I might, upon this subject, speak of the *vis medicatrix naturæ* ; and there is a foundation for the term : but, as I do not admit the Stahlian doctrine of an administering soul, I make use of the term only as expressing a fact, and would not employ it with the view

of conveying any explanation of the manner in which the powers of collapse mechanically produce their effects. In the mean time, however, I maintain, that there are certain powers of collapse, which in effect prove stimulants, and produce epilepsy.

MCCC. That there are such powers, which may be termed Indirect Stimulants, I conclude from hence, that several of the causes of epilepsy are such as frequently produce syncope, which we suppose always to depend upon causes weakening the energy of the brain (MCLXXVI.) It may give some difficulty to explain, why the same causes sometimes occasion syncope, and sometimes occasion the reaction that appears in epilepsy ; and I shall not attempt to explain it : but this, I think, does not prevent my supposing that the operation of these causes is by collapse. That there are such causes producing epilepsy, will, I think, appear very clearly from the particular examples of them I am now to mention.

MCCC I. The first to be mentioned, which I suppose to be of this kind, is hemorrhagy, whether spontaneous or artificial. That the same hemorrhagy which produces syncope, often at the same time produces epilepsy, is well known ; and from many experiments and observations it appears, that hemorrhagies occurring to such a degree as to prove mortal, seldom do so without first producing epilepsy.

MCCC II. Another cause acting, as I suppose, by collapse, and therefore sometimes producing syncope and sometimes epilepsy, is terror ; that is, the fear of some great evil suddenly presented. As this produces at the same time a sudden and considerable emotion, (MCLXXX.) so it more frequently produces epilepsy than syncope.

MCCC III. A third cause acting by collapse, and producing epilepsy, is horror ; or a strong aversion suddenly raised by a very disagreeable sensation, and frequently arising from a sympathy with the pain or danger of another person. As horror is often a cause of syncope, there can be no doubt of its manner of operating in producing epilepsy ; and it may perhaps be explained upon this general principle, That as desire excites action and gives ac-

tivity, so aversion restrains from action, that is, weakens the energy of the brain ; and, therefore, that the higher degrees of aversion may have the effect of producing syncope or epilepsy.

MCCCIV. A fourth set of the causes of epilepsy, which I suppose also to act by collapse, are certain odors, which occasion either syncope or epilepsy ; and, with respect to the former, I have given my reasons (MCLXXXII.) for supposing odors in that case to act rather as disagreeable than as sedative. These reasons will, I think, also apply here ; and perhaps the whole affair of odors might be considered as instances of the effect of horror, and therefore belonging to the last head.

MCCCV. A fifth head of the causes producing epilepsy by collapse, is the operation of many substances considered, and for the most part properly considered, as poisons. Many of these, before they prove mortal, occasion epilepsy. This effect, indeed, may in some cases be referred to the inflammatory operation which they sometimes discover in the stomach and other parts of the alimentary canal ; but as the greater part of the vegetable poisons show chiefly a narcotic, or strongly sedative power, it is probably by this power that they produce epilepsy, and therefore belong to this head of the causes acting by collapse.

MCCCVI. Under the head of the remote causes producing epilepsy, we must now mention that peculiar one whose operation is accompanied with what is called the *Aura Epileptica*. This is a sensation of something moving in some part of the limbs or trunk of the body, and from thence creeping upwards to the head ; and when it arrives there, the person is immediately deprived of sense, and falls into an epileptic fit. This motion is described by the person's feeling it sometimes as a cold vapor, sometimes as a fluid gliding, and sometimes as the sense of a small insect creeping along their body ; and very often they can give no distinct idea of their sensation, otherwise than as in general of something moving along. This sensation might be supposed to arise from some affection of the extremity or other part of a nerve

acted upon by some irritating matter ; and that the sensation, therefore, followed the course of such a nerve : but I have never found it following distinctly the course of any nerve ; and it generally seems to pass along the teguments. It has been found in some instances to arise from something pressing upon or irritating a particular nerve; and that sometimes in consequence of contusion or wound : but instances of these are more rare ; and the more common consequence of contusions and wounds is a tetanus. This latter effect wounds produce, without giving any sensation of an aura, or other kind of motion proceeding from the wounded part to the head ; while, on the other hand, the aura producing epilepsy often arises from a part which had never before been affected with wound or contusion, and in which part the nature of the irritation can seldom be discovered.

It is natural to imagine that this aura epileptica is an evidence of some irritation or direct stimulus acting in the part, and from thence communicated to the brain, and should therefore have been mentioned among the causes acting by excitement ; but the remarkable difference that occurs in seemingly like causes producing tetanus, gives some doubt on this subject.

MCCCVII. Having now enumerated the occasional causes of epilepsy, I proceed to consider the predisponent. As so many of the above mentioned causes act upon certain persons, and not at all upon others, there must be supposed in those persons a predisposition to this disease : But in what this predisposition consists, is not to be easily ascertained.

MCCCVIII. As many of the occasional causes are weak impressions, and are applied to most persons with little or no effect, I conclude, that the persons affected by those causes are more easily moved than others ; and therefore that, in this case, a certain mobility gives the predisposition. It will, perhaps, make this matter clearer, to show, in the first place, that, there is a greater mobility of constitution in some persons than in others.

MCCCIX. This mobility appears most clearly in the state of the mind. If a person is readily elated by hope, and

as readily depressed by fear, and passes easily and quickly from the one state to the other ; if he is easily pleased, and prone to gaiety, and as easily provoked to anger, and rendered peevish ; if liable, from slight impressions, to strong emotions, but tenacious of none ; this is the boyish temperament, *qui colligit ac ponit iram temere, et mutatur in horas* ; this is the *varium et mutabile fæmina* ; and, both in the boy and woman, every one perceives and acknowledges a mobility of mind. But this is necessarily connected with an analogous state of the brain ; that is, with a mobility, in respect of every impression, and therefore liable to a ready alternation of excitement and collapse, and of both to a considerable degree.

MCCCX. There is, therefore, in certain persons, a mobility of constitution, generally derived from the state of original stamina, and more exquisite at a certain period of life than at others ; but sometimes arising from, and particularly modified by occurrences in the course of life.

MCCCXI. This mobility consists in a greater degree of either sensibility or irritability. These conditions, indeed, physicians consider as so necessarily connected, that the constitution, with respect to them, may be considered as one and the same : but I am of opinion that they are different ; and that mobility may sometimes depend upon an increase of the one, and sometimes on that of the other. If an action excited is, by repetition, rendered more easily excited, and more vigorously performed, I consider this as an increase of irritability only. I go no farther on this subject here, as it was only necessary to take notice of the case just now mentioned, for the purpose of explaining why epilepsy, and convulsions of all kinds, by being repeated, are more easily excited, readily become habitual, and are therefore of more difficult cure.

MCCCXII. However we may apply the distinction of sensibility and irritability, it appears that the mobility, which is the predisponent cause of epilepsy, depends more particularly upon debility, or upon a plethoric state of the body.

MCCCXIII. What share debility, perhaps by inducing sensibility, has in this matter, appears clearly from hence; that children, women, and other persons of manifest debility, are the most frequent subjects of this disease.

MCCCXIV. The effects of a plethoric state in disposing to this disease appears from hence, that plethoric persons are frequently the subjects of it; that it is commonly excited, as I have said above, by the causes of any unusual turgescence of the blood; and that it has been frequently cured by diminishing the plethoric state of the body.

That a plethoric state of the body should dispose to this disease, we may understand from several considerations. *1st*, Because a plethoric state implies, for the most part, a laxity of the solids, and therefore some debility in the moving fibres. *2dly*, Because, in a plethoric state, the tone of the moving fibres depends more upon their tension than upon their inherent power: and as their tension depends upon the quantity and impetus of the fluids in the blood vessels, which are very changeable, and by many causes frequently changed, so these frequent changes must give a mobility to the system. *3dly*, Because a plethoric state is favorable to a congestion of blood in the vessels of the brain, it must render these more readily affected by every general turgescence of the blood in the system, and therefore more especially dispose to this disease.

MCCCXV. There is another circumstance of the body disposing to epilepsy, which I cannot so well account for; and that is, the state of sleep: but whether I can account for it or not, it appears, in fact, that this state gives the disposition I speak of; for, in many persons liable this disease, the fits happen only in the time of sleep, or immediately upon the persons coming out of it. In a case related by De Haen, it appeared clearly, that the disposition to epilepsy depended entirely upon the state of the body in sleep.

MCCCXVI. Having thus considered the whole of the remote causes of epilepsy, I proceed to treat of its cure, as I have said it is from the consideration of those remote

causes only, that we can obtain any directions for our practice in this disease.

I begin with observing, that as the disease may be considered as sympathetic or idiopathic, I must treat of these separately, and judge it proper to begin with the former.

MCCCXVII. When this disease is truly sympathetic, and depending upon a primary affection in some other part of the body, such as acidity or worms in the alimentary canal, teething, or other similar causes, it is obvious, that such primary affections must be removed for the cure of the epilepsy ; but it is not our business here to say how these primary diseases are to be treated.

MCCCXVIII. There is, however, a peculiar case of sympathetic epilepsy ; that is the case accompanied with the *aura epileptica*, as described in MCCCVI, in which, though we can perceive by the *aura epileptica* arising from a particular part, that there is some affection in that part ; yet, as in many such cases we cannot perceive of what nature the affection is, I can only offer the following general directions :

1st, When the part can with safety be entirely destroyed, we should endeavor to do so by cutting it out, or by destroying it by the application of an actual or potential cautery.

2^{dly}, When the part cannot be properly destroyed, that we should endeavor to correct the morbid affection in it by blistering, or by establishing an issue upon the part.

3^{rdly}, When these measures cannot be executed, or do not succeed, if the disease seems to proceed from the extremity of a particular nerve which we can easily come at in its course, it will be proper to cut through that nerve, as before proposed on the subject of tetanus.

4^{thly}, When it cannot be perceived that the *aura* arises from any precise place or point, so as to direct to the above mentioned operations ; but, at the same time, we can perceive its progress along the limb ; it frequently happens that the epilepsy can be prevented by a ligature applied upon the limb, above the part from which the *aura* arises ; and this is always proper to be done, both because the preventing a fit breaks the habit of the dis-

ease, and because the frequent compression renders the nerves less fit to propagate the *aura*.

MCCCXIX. The cure of idiopathic epilepsy, as I have said above, is to be directed by our knowledge of the remote causes. There are therefore two general indications to be formed : The first is, to avoid the occasional causes ; and the second is, to remove or correct the predisponent.

This method, however, is not always purely palliative ; as in many cases the predisponent may be considered as the only proximate cause, so our second indication may be often considered as properly curative.

MCCCXX. From the enumeration given above, it will be manifest, that for the most part the occasional causes, so far as they are in our power, need only to be known, in order to be avoided ; and the means of doing this will be sufficiently obvious. I shall here, therefore, offer only a few remarks.

MCCCXXI. One of the most frequent of the occasional causes is that of over distension (MCCCXIV.), which, so far as it depends upon a plthoric state of the system, I shall say hereafter how it is to be avoided. But as, not only in the plethoric, but in every moveable constitution, occasional turgescence is a frequent means of exciting epilepsy, the avoiding therefore of such turgescence, is what ought to be most constantly the object of attention to persons liable to epilepsy.

MCCCXXII. Another of the most frequent exciting causes of this disease are, all strong impressions suddenly made upon the senses ; for as such impressions, in moveable constitutions, break in upon the usual force, velocity, and order of the motions of the nervous system, they thereby readily produce epilepsy. Such impressions therefore, and especially those which are suited to excite any emotion or passion of the mind, are to be most carefully guarded against by persons liable to epilepsy.

MCCCXXIII. In many cases of epilepsy, where the predisponent cause cannot be corrected or removed, the recurrence of the disease can only be prevented by the strictest attention to avoid the occasional ; and as the disease is

often confirmed by repetition and habit, so the avoiding the frequent recurrence of it is of the utmost importance towards its cure.

These are the few remarks I have to offer with respect to the occasional causes ; and must now observe, that for the most part, the complete, or as it is called, the Radical Cure, is only to be obtained by removing or correcting the predisponent cause.

MCCCXIV. I have said above, that the predisponent cause of epilepsy is a certain mobility of the sensorium ; and that this depends upon a plethoric state of the system, or upon a certain state of debility in it.

MCCCXXV. How the plethoric state of the system is to be corrected, I have treated of fully above in DCCLXXXIII. *et seq.* and I need not repeat it here. It will be enough to say, that it is chiefly to be done by a proper management of exercise and diet ; and, with respect to the latter, it is particularly to be observed here, that an abstemious course has been frequently found to be the most certain means of curing epilepsy.

MCCCXXVI. Considering the nature of the matter poured out by issues, these may be supposed to be a constant means of obviating the plethoric state of the system ; and it is perhaps therefore that they have been so often found useful in epilepsy. Possibly also, as an open issue may be a means of determining occasional turgescences to such places, and therefore of diverting them in some measure from their action upon the brain ; so also, in this manner, issues may be useful in epilepsy.

MCCCXXVII. It might be supposed that blood letting would be the most effectual means of correcting the plethoric state of the system ; and such it certainly proves when the plethoric state has become considerable, and immediately threatens morbid effects. It is therefore, in such circumstances, proper and necessary : but as we have said above, that blood letting is not the proper means of obviating a recurrence of the plethoric state, and, on the contrary, is often the means of favoring it ; so it is a remedy not advisable in every circumstance of epilepsy. There is, however, a case of epilepsy in which there is a

periodical or occasional recurrence of the fulness and turgescence of the sanguiferous system, giving occasion to a recurrence of the disease. In such cases, when the means of preventing plethora have been neglected, or may have proved ineffectual, it is absolutely necessary for the practitioner to watch the returns of these turgescences, and to obviate their effects by the only certain means of doing it, that is, by a large blood letting.

MCCCXXVIII. The second cause of mobility which we have assigned, is a state of debility. If this is owing, as it frequently is, to original conformation, it is perhaps not possible to cure it ; but when it has been brought on in the course of life, it possibly may admit of being mended ; and in either case, much may be done to obviate and prevent its effects.

MCCCXXIX. The means of correcting debility, so far as it can be done, are, The person's being much in cool air ; the frequent use of cold bathing ; the use of exercise, adapted to the strength and habits of the person ; and perhaps the use of astringent and tonic medicines.

These remedies are suited to strengthen the inherent power of the solids or moving fibres : but as the strength of these depends also upon their tension, so when debility has proceeded from inanition, the strength may be restored, by restoring the fulness and tension of the vessels by a nourishing diet ; and we have had instances of the propriety and success of such a practice.

MCCCXXX. The means of obviating the effects of debility, and of the mobility depending upon it are the use of tonic and antispasmodic remedies.

The tonics are, Fear, or some degree of terror astringents ; certain vegetable and metallic tonics ; and cold bathing.

MCCCXXXI. That fear, or some degree of terror, may be of use in preventing epilepsy, we have a remarkable proof in Boerhaave's cure of the epilepsy, which happened in the Orphan house at Haerlem. See Kauu Boerhaave's treatise, intitled *Impetum Faciens*, § 406. And we have met with several other instances of the same.

As the operation of horror is in many respects analogous to that of terror, several seemingly superstitious remedies have been employed for the cure of epilepsy ; and, if they have ever been successful, I think it must be imputed to the horror they had inspired.

MCCCXXXII. Of the astringent medicines used for the cure of epilepsy, the most celebrated is the *villus quercinus*, which, when given in large quantities, may possibly be useful ; but I believe it was more especially so in ancient times, when it was an object of superstition. In the few instances in which I have seen it employed, it did not prove of any effect.

MCCCXXXIII. Among the vegetable tonics, the bitters are to be reckoned ; and it is by this quality that I suppose the orange tree leaves to have been useful : but they are not always so..

MCCCXXXIV. The vegetable tonic, which from its use in analogous cases is the most promising, is the Peruvian bark ; this, upon occasion, has been useful, but has also often failed. It is especially adapted to those epilepsies which recur at certain periods, and which are at the same time without the recurrence of any plethoric state, or turgescence of the blood ; and in such periodical cases, if the bark is employed some time before the expected recurrence, it may be useful : but it must be given in large quantity, and as near to the time of the expected return as possible.

MCCCXXXV. The metallic tonics seem to be more powerful than the vegetable, and a great variety of the former have been employed.

Even arsenic has been employed in the cure of epilepsy ; and its use in intermittent fevers gives analogy in its favor.

Preparations of tin have been formerly recommended in the cure of epilepsy, and in the cure of the analogous disease of hysteria ; and several considerations render the virtues of tin, with respect to these diseases, probable : but I have had no experience of its use in such cases.

A much safer metallic tonic is to be found in the preparations of iron ; and we have seen some of them employ-

ed in the cure of epilepsy, but have never found them to be effectual. This, however, I think, may be imputed to their not having been always employed in circumstances of the disease, and in the quantities of the medicine, that were proper and necessary.

MCCCXXXVI. Of the metallic tonics, the most celebrated, and the most frequently employed is copper, under various preparation. What preparation of it may be the most effectual, I dare not determine; but of late the *cuprum ammoniacum* has been frequently found successful.

MCCCXXXVII. Lately the flowers of zinc have been recommended by a great authority as useful in all convulsive disorders; but in cases of epilepsy, I have not hitherto found that medicine useful.

MCCCXXXVIII. There have been of late some instances of the cure of epilepsy by the accidental use of mercury; and if the late accounts of the cure of tetanus by this remedy are confirmed it will allow us to think that the same may be adapted also to the cure of certain cases of epilepsy.

MCCCXXIX. With respect to the employment of any of the above mentioned tonics in this disease, it must be observed, that in all cases where the disease depends upon a constant or occasional plethoric state of the system, these remedies are likely to be ineffectual; and if sufficient evacuations are not made at the same time, these medicines are likely to be very hurtful.

MCCCXL. The other set of medicines which we have mentioned as suited to obviate the effects of the too great mobility of the system, are the medicines named *antispasmodics*. Of these there is a long list in the writers on the *Materia Medica*, and by these authors recommended for the cure of epilepsy. The greater part, however, of those taken from the vegetable kingdom, are manifestly inert and insignificant. Even the root of the wild valerian hardly supports its credit.

MCCCX. Certain substances taken from the animal kingdom prove to be much more powerful: and of these the chief and formidably the most powerful, is musk;

which, employed in its genuine state, and in due quantity, has often been an effectual remedy.

It is probable also, that the *oleum animale*, as it has been named, when in its purest state, and exhibited at a proper time, may be an effectual remedy.

MCCCXLII. In many diseases, the most powerful antispasmodic is certainly opium ; but the propriety of its use in epilepsy has been disputed among physicians. When the disease depends upon a plethoric state, in which bleeding may be necessary, the employment of opium is likely to be very hurtful ; but when there is no plethoric or inflammatory state present, and the disease seems to depend upon irritation or upon increased irritability, opium is likely to prove the most certain remedy. Whatever effects in this and other convulsive disorders have been attributed to the *hyoscyamus*, must probably be attributed to its possessing a narcotic power similar to that of opium.

MCCCXLIII. With respect to the use of antispasmodics, it is to be observed, that they are always most useful, and perhaps only useful when employed at a time when epileptic fits are frequently recurring, or near to the times of the accession of fits which recur after considerable intervals.

MCCCXLIV. On the subject of the cure of epilepsy, I have only to add, that as the disease in many cases is continued by the power of habit only, and that in all cases habit has a great share in increasing mobility, and therefore in continuing this disease ; so the breaking in upon such habit, and changing the whole habits of the system, is likely to be a powerful remedy in epilepsy. Accordingly, a considerable change of climate, diet, and other circumstances in the manner of life, has often proved a cure of this disease.

MCCCXLV. After treating of epilepsy, I might here treat of particular convulsions, which are to be distinguished from epilepsy by their being more partial ; that is, affecting certain parts of the body only, and by their not being attended with a loss of sense, nor ending in such a comatose state as epilepsy always does.

MCCCXLVI. Of such convulsive affections, many different instances have been observed and recorded by physicians. But many of these have been manifestly sympathetic affections, to be cured only by curing the primary disease upon which they depend, and therefore not to be treated of here: Or though they are such as cannot be referred to another disease, as many of them however have not any specific character with which they occur in different persons, I must therefore leave them to be treated upon the general principles I have laid down with respect to epilepsy, or shall lay down with respect to the following convulsive disorder; which as having very constantly in different persons a peculiar character, I think necessary to treat of more particularly.

C H A P. III.

OF THE CHOREA*, OR DANCE OF ST. VITUS.

MCCCXLVII. THIS disease affects both sexes, and almost only young persons. It generally happens from the age of ten to that of fourteen years. It comes on always before the age of puberty, and rarely continues beyond that period.

MCCCXLVIII. It is chiefly marked by convulsive motions, somewhat varied in different persons, but nearly of one kind in all; affecting the leg and arm on the same side, and generally on one side only.

MCCCXLIX. These convulsive motions commonly first affect the leg and foot. Though the limb be at rest, the foot is often agitated by convulsive motions, turning it alternately outwards and inwards. When walking is attempted, the affected leg is seldom lifted, as usual in walking, but is dragged along as if the whole limb were paralytic; and, when it is attempted to be lifted, this motion

* Attacking young people of both sexes, for the most part between the tenth and fourteenth year of their age, with convulsive motions of the hand and arms, not altogether involuntary, chiefly of one side; in walking, the affected leg is dragged after the other. *Syn. Nys.*

is unsteadily performed, the limb becoming agitated by irregular convulsive motions.

MCCCI. The arm of the same side is generally affected at the same time ; and, even when no voluntary motion is attempted, the arm is frequently agitated with various convulsive motions. But especially when voluntary motions are attempted, these are not properly executed, but are variously hurried or interrupted by convulsive motions in a direction contrary to that intended. The most common instance of this is in the person's attempting to carry a cup of liquor to his mouth, when it is only after repeated efforts, interrupted by frequent convulsive retractions and deviations, that the cup can be carried to the mouth.

MCCCLI. It appears to me, that the will often yields to these convulsive motions, as to a propensity, and thereby they are often increased, while the person affected seems pleased with increasing the surprise and amusement which his motions occasion in the bystanders.

MCCCLII. In this disease the mind is often affected with some degree of fatuity ; and often shows the same varied, desultory, and causeless emotions which occur in hysteria.

MCCCLIII. These are the most common circumstances of this disease ; but at times and in different persons, it is varied by some difference in the convulsive motions, particularly by these affecting the head and trunk of the body. As in this disease there seems to be propensities to motion, so various fits of leaping and running occur in the persons affected ; and there have been instances of this disease, consisting of such convulsive motions, appearing as an epidemic in a certain corner of the country. In such instances, persons of different ages are affected, and may seem to make an exception to the general rule above laid down ; but still the persons are, for the most part, the young of both sexes, and of the more manifestly moveable constitutions.

MCCCLIV. The method of curing this disease has been variously proposed. Dr. Sydenham proposed to cure it by alternate bleeding and purging. In some plethoric

habits I have found some bleeding useful; but in many cases I have found repeated evacuations, especially by bleeding, very hurtful.

In many cases, I have found the disease, in spite of remedies of all kinds, continue for many months; but I have also found it often readily yield to tonic remedies, such as the Peruvian bark, and chalybeates.

The late Dr. De Haen found several persons laboring under this disease cured by the application of electricity.

S E C T. II.

Of the Spasmodic Affections of the Vital Functions.

C H A P. IV*.

OF THE PALPITATION † OF THE HEART.

MCCCLV. THE motion thus named is a contraction or systole of the heart, that is performed with more rapidity, and generally also with more force, than usual; and when at the same time the heart strikes with more than usual violence against the inside of the ribs, producing often a considerable sound.

MCCCLVI. This motion, or palpitation, is occasioned by a great variety of causes, which have been recited with great pains by Mr. Senac and others, whom, however, I cannot follow in all the particulars with sufficient discernment, and therefore shall here only attempt to refer all the several cases of this disease to a few general heads.

MCCCLVII. The first is of those arising from the application of the usual stimulus to the heart's contraction; that is, the influx of the venous blood into its cavities,

* Though I have thought it proper to divide this book into sections, I think it necessary, for the convenience of references, to number the chapters from the beginning. *Author.*

† Irregular and violent action of the heart. *Syn.* *Noſ.*

being made with more velocity, and therefore, in the same time, in greater quantity than usual. It seems to be in this manner that violent exercise occasions palpitation.

MCCCCLVIII. A second head of the cases of palpitation, is of those arising from any resistance given to the free and entire evacuation of the ventricles of the heart. Thus a ligature made upon the aorta occasions palpitations of the most violent kind. Similar resistances, either in the aorta or pulmonary artery, may be readily imagined; and such have been often found in the dead bodies of persons who, during life, had been much affected with palpitations.

To this head are to be referred all those cases of palpitation arising from causes producing an accumulation of blood in the great vessels near to the heart.

MCCCCLIX. A third head of the cases of palpitation, is of those arising from a more violent and rapid influx of the nervous power into the muscular fibres of the heart. It is in this manner that I suppose various causes acting in the brain, and particularly certain emotions of the mind, occasion palpitation.

MCCCCLX. A fourth head of the cases of palpitation, is of those arising from causes producing a weakness in the action of the heart, by diminishing the energy of the brain with respect to it. That such causes operate in producing palpitation, I presume from hence, that all the several causes mentioned above (MCLXXVII. *et seq.*), as in this manner producing syncope do often produce palpitation. It is on this ground that these two diseases are affections frequently occurring in the same person, as the same causes may occasion the one or the other, according to the force of the cause and mobility of the person acted upon. It seems to be a law of the human economy, that a degree of debility occurring in any function, often produces a more vigorous exertion of the same, or at least an effort towards it, and that commonly in a convulsive manner.

I apprehend it to be the convulsive action, frequently ending in some degree of a spasm, that gives occasion to

the intermittent pulse so frequently accompanying palpitation.

MCCCLXI. A fifth head of the cases of palpitation may perhaps be of those arising from a peculiar irritability or mobility of the heart. This, indeed, may be considered as a predisponent cause only, giving occasion to the action of the greater part of the causes recited above. But it is proper to observe, that this predisposition is often the chief part of the remote cause ; insomuch that many of the causes producing palpitation would not have this effect but in persons peculiarly predisposed. This head, therefore, of the cases of palpitation, often requires to be distinguished from all the rest.

MCCCLXII. After thus marking the several cases and causes of palpitation, I think it necessary, with a view to the cure of this disease, to observe, that the several causes of it may be again reduced to two heads. The first is, of those consisting in, or depending upon, certain organic affections of the heart itself, or of the great vessels immediately connected with it. The second is, of those consisting in, or depending upon, certain affections subsisting and acting in other parts of the body, and acting either by the force of the cause, or in consequence of the mobility of the heart.

MCCCLXIII. With respect to the cases depending upon the first set of causes, I must repeat here what I said with respect to the like cases of syncope, that I do not know any means of curing them. They, indeed, admit of some palliation, *first* by avoiding every circumstance that may hurry the circulation of the blood ; and, *secondly*, by every means of avoiding a plethoric state of the system, or any occasional turgescence of the blood. In many of these cases, blood letting may give a temporary relief : but in so far as debility and mobility are concerned, in such cases this remedy is likely to do harm.

MCCCLXIV. With respect to the cases depending upon the other set of causes, they may be various and require very different measures : but I can here say in general, that these cases may be considered as of two kinds ; one depending upon primary affections in other parts of

the body, and acting by the force of the particular causes ; and another depending upon a state of mobility in the heart itself. In the first of these, it is obvious, that the cure of the palpitation must be obtained by curing the primary affection ; which is not to be treated of here. In the second, the cure must be obtained, partly by diligently avoiding the occasional causes, partly and chiefly by correcting the mobility of the system, and of the heart in particular ; for doing which we have treated of the proper means elsewhere.



C H A P. V.

OF DYSPNOEA*, OR DIFFICULT BREATHING.

MCCCLXV. THE exercise of respiration, and the organs of it, have so constant and considerable a connection with almost the whole of the other functions and parts of the human body, that upon almost every occasion of disease, respiration must be affected. Accordingly some difficulty and disorder in this function, are in fact symptoms very generally accompanying disease.

MCCCLXVI. Upon this account the symptom of difficult breathing deserves a chief place and an ample consideration in the general system of Pathology ; but what share of consideration it ought to have in a treatise of Practice, I find it difficult to determine.

MCCCLXVII. On this subject, it is, in the first place, necessary to distinguish between the symptomatic and idiopathic affections ; that is, between those difficulties of breathing which are symptoms only of a more general affection, or of a disease subsisting primarily in other parts than the organs of respiration, and that difficulty of breathing which depends upon a primary affection of the lungs themselves. The various cases of symptomatic

* Perpetual difficulty of breathing, without any straitness, but rather with a sense of distension and infarction in the breast ; a frequent cough through the whole course of the disease. See, Vol. I.

dyspnœa I have taken pains to enumerate in my Methodical Nosology, and it will be obvious they are such as cannot be taken notice of here.

MCCCLXVIII. In my Nosophy I have also taken pains to point out and enumerate the proper, or at least the greater part of the proper, idiopathic cases of dyspnœa ; but from that enumeration it will, I think, readily appear, that few, and indeed hardly any, of these cases will admit or require much of our notice in this place.

MCCCLXIX. The *Dyspnœa Sicca*, *sp. 2d*, the *Dyspnœa Aerea*, *sp. 3d*, the *Dyspnœa Terea*, *sp. 4th*, and *Dyspnœa Thracica*, *sp. 7th*, are some of them with difficulty known, and are all of them diseases which in my opinion do not admit of cure. All, therefore, that can be said concerning them here is, that they may admit of some palliation ; and this, I think, is to be obtained chiefly by avoiding a plethoric state of the lungs, and every circumstance that may hurry respiration.

MCCCLXX. Of the *Dyspnœa Extrinseca*, *sp. 8th*, I can say no more, but that these external causes marked in the Nosology, and perhaps some others that might have like effects, are to be carefully avoided ; or when they have been applied, and their effects have taken place, the disease is to be palliated by the means mentioned in the last paragraph.

MCCCLXXI. The other species, though enumerated as idiopathic, can hardly be considered as such, or as requiring to be treated of here.

The *Dyspnœa Catarrhalis*, *sp. 1st*, may be considered as a species of catarrh, and is pretty certainly to be cured by the same remedies as that species of catarrh which depends rather upon the increased afflux of mucus to the bronchiæ, than upon any inflammatory state in them.

The *Dyspnœa Aquosa*, *sp. 5th*. is certainly to be considered as a species of dropsy, and is to be treated by the same remedies as the other species of that disease.

The *Dyspnœa Pinguedinosa*, *sp. 6th*, is in like manner to be considered as a symptom or local effect of the Polysarcia, and is only to be cured by correcting the general fault of the system.

MCCCCLXXII. From this view of those idiopathic cases of dyspnœa, which are perhaps all I could properly arrange under this title, it will readily appear that there is little room for treating of them here : but there is still one case of difficult breathing, which has been properly distinguished from every other under the title of *Asthma* ; and as it deserves our particular attention, I shall here separately consider it.

C H A P. VI.

OF ASTHMA.*

MCCCCLXXIII. THE term of Asthma has been commonly applied by the vulgar, and even by many writers on the Practice of Physic, to every case of difficult breathing, that is, to every species of Dyspnœa. The Methodica Nosophists, also, have distinguished Asthma from Dyspnœa chiefly, and almost solely, by the former being the same affection with the latter, but in a higher degree. Neither of these applications of the term seems to have been correct or proper. I am of opinion, that the term asthma may be most properly applied, and should be confined, to a case of difficult breathing that has peculiar symptoms, and depends upon a peculiar proximate cause, which I hope to assign with sufficient certainty. It is this disease I am now to treat of, and it is nearly what Practical writers have generally distinguished from the other cases of difficult breathing, by the title of Spasmodic Asthma, or of *Asthma Convulsivum* ; although, by not distinguishing it with sufficient accuracy from the other cases of Dyspnœa, they have introduced a great deal of confusion into their treatises on this subject.

MCCCCLXXIV. The disease I am to treat of, or the Asthma to be strictly so called, is often a hereditary disease.

* A difficulty of breathing, recurring at intervals, with a sense of straitness in the breast ; respiration is performed with a wheezing noise : cough about the beginning of the paroxysm is difficult, and imperfect ; towards the end it becomes free, and is attended with a copious mucus expectoration. *Syn. Nef.*

It seldom appears very early in life, and hardly till the time of puberty, or after it. It affects both sexes, but most frequently the male. I have not observed it to be more frequent in one kind of temperament than in another ; and it does not seem to depend upon any general temperament of the whole body, but upon a particular constitution of the lungs alone. It frequently attacks persons of a full habit ; but it hardly ever continues to be repeated for some length of time without occasioning an emaciation of the whole body.

MCCCLXXV. The attacks of this disease are generally in the night time, or towards the approach of night ; but there are also some instances of their coming on in the course of the day. At whatever time they come on, it is for the most part suddenly, with a sense of tightness and stricture across the breast, and a sense of straitness in the lungs, impeding inspiration. The person thus attacked if in a horizontal situation, is immediately obliged to get into somewhat of an erect posture, and requires a free and cool air. The difficulty of breathing goes on for some time increasing, and both inspiration and expiration are performed slowly, and with a whizzing noise. In violent fits, speaking is difficult and uneasy. There is often some propensity to coughing, but it can hardly be executed.

MCCCLXXVI. These symptoms often continue for many hours together, and particularly from midnight till the morning is far advanced. Then commonly a remission takes place by degrees ; the breathing becomes less laborious and more full, so that the person can speak and cough with more ease ; and, if the cough brings up some mucus, the remission becomes immediately more considerable, and the person falls into a much wished for sleep.

MCCCLXXVII. During these fits, the pulse often continues in its natural state ; but, in some persons, the fits are attended with a frequency of pulse, and with some heat and thirst, as marks of some degree of fever. If urine be voided at the beginning of a fit, it is commonly in considerable quantity, and with little color or odor ; but, after the fit is over, the urine voided is in the ordinary

quantity, of a high color, and sometimes deposits a sediment. In some persons, during the fit, the face is a little flushed and turgid; but more commonly, it is somewhat pale and shrunk.

MCCCLXXVIII. After some sleep in the morning, the patient, for the rest of the day, continues to have more free and easy breathing, but it is seldom entirely such. He still feels some tightness across his breast, cannot breathe easily in a horizontal posture, and can hardly bear any motion of his body, without having his breathing rendered more difficult and uneasy. In the afternoon, he has an unusual flatulency of his stomach, and an unusual drowsiness; and, very frequently, these symptoms precede the first attacks of the disease. But whether these symptoms appear or not, the difficulty of breathing returns towards the evening, and then sometimes gradually increases, till it becomes as violent as in the night before; or if, during the day, the difficulty of breathing has been moderate, and the person gets some sleep in the first part of the night, he is however waked about midnight, or at some time between midnight and two o'clock in the morning, and is then suddenly seized with a fit of difficult breathing, which runs the same course as the night before.

MCCCLXXIX. In this manner, fits return for several nights successively; but generally, after some nights passed in this way, the fits suffer more considerable remissions. This especially happens when the remissions are attended with a more copious expectoration in the mornings, and that this continues from time to time throughout the day. In these circumstances, asthmatics, for a long time after, have not only more easy days, but enjoy also nights of entire sleep, without the recurrence of the disease.

MCCCLXXX. When this disease, however, has once taken place, in the manner above described, it is ready to return at times for the whole of life after. These returns, however, happen with different circumstances in different persons.

MCCCLXXXI. In some persons, the fits are readily excited by external heat, whether of the weather or of a warm

chamber, and particularly by warm bathing. In such persons, fits are more frequent in summer, and particularly during the dog days, than at other colder seasons. The same persons are also readily affected by changes of the weather, especially by sudden changes made from a colder to a warmer, or, what is commonly the same thing, from a heavier to a lighter atmosphere. The same persons are also affected by every circumstance straitening the capacity of the thorax, as by any ligature made, or even by a plaster laid upon it ; and a like effect happens from any increased bulk of the stomach, either by a full meal, or by air collected in it. They are likewise much affected by exercise, or whatever else can hurry the circulation of the blood.

MCCCLXXXII. As asthmatic fits seem thus to depend upon some fulness of the vessels of the lungs, it is probable that an obstruction of perspiration, and the blood being less determined to the surface of the body, may favor an accumulation in the lungs, and thereby be a means of exciting asthma. This seems to be the case of those asthmatics who have fits most frequently in the winter season, and who have commonly more of a catarrhal affection accompanying the asthma ; which, therefore, occurs more frequently in winter, and more manifestly from the application of cold.

MCCCLXXXIII. Beside these cases of asthma excited by heat or cold, there are others, in which the fits are especially excited by powers applied to the nervous system, as by passions of the mind, by particular odors, and by irritations of smoke and dust.

That this disease is an affection of the nervous system, and depending upon a mobility of the moving fibres of the lungs, appears pretty clearly from its being frequently connected with other spasmodic affections depending upon mobility ; such as hysteria, hypochondriasis, dyspepsia, and atonic gout.

MCCCLXXXIV. From the whole of the history of asthma now delivered, I think it will readily appear, that the proximate cause of this disease is a preternatural, and in some measure a spasmodic constriction of the muscular

fibres of the bronchiæ, which not only prevents the dilatation of the bronchiæ necessary to a free and full inspiration, but gives also a rigidity which prevents a full and free expiration. This preternatural constriction, like many other convulsive and spasmodic affections, is readily excited by a turgescence of the blood, or other cause of any unusual fulness and distension of the vessels of the lungs.

MCCCLXXXV. This disease, as coming by fits, may be generally distinguished from most other species of dyspnœa, whose causes being more constantly applied, produce, therefore, a more constant difficulty of breathing. There may, however, be some fallacy in this matter, as some of these causes may be liable to have abatements and intensities, whereby the dyspnœa produced by them may seem to come by fits; but I believe it is seldom that such fits put on the appearance of the genuine asthmatic fits described above. Perhaps, however, there is still another case that may give more difficulty; and that is, when several of the causes, which we have assigned as causes of several of the species of difficult breathing referred to the genus of Dyspnœa, may have the effect of exciting a genuine asthmatic fit. Whether this can happen to any but the particularly predisposed to asthma, I am uncertain; and, therefore, whether, in any such cases, the asthma may be considered as symptomatic, or if, in all such cases, the asthma may not still be considered and treated as an idiopathic disease.

MCCCLXXXVI. The asthma, though often threatening immediate death, seldom occasions it; and many persons have lived long under this disease. In many cases, however, it does prove fatal sometimes very quickly, and perhaps always at length. In some young persons it has ended soon, by occasioning a phthisis pulmonalis. After a long continuance, it often ends in hydrothorax; and commonly, by occasioning some aneurism of the heart or great vessels, it thereby proves fatal.

MCCCLXXXVII. As it is seldom that an asthma has been entirely cured, I therefore cannot propose any method of cure which experience has approved as generally suc-

cessful. But the disease admits of alleviation in several respects from the use of remedies ; and my business now shall be chiefly to offer some remarks upon the choice and use of the remedies which have been commonly employed in cases of asthma.

MCCCLXXXVIII. As the danger of an asthmatic fit arises chiefly from the difficult transmission of the blood through the vessels of the lungs, threatening suffocation ; so the most probable means of obviating this seems to be blood letting ; and, therefore, in all violent fits, practitioners have had recourse to this remedy. In first attacks, and especially in young and plethoric persons, blood letting may be very necessary, and is commonly allowable. But it is also evident, that, under the frequent recurrence of fits, blood letting cannot be frequently repeated, without exhausting and weakening the patient too much. It is further to be observed, that blood letting is not so necessary as might be imagined, as the passage of the blood through the lungs is not so much interrupted as has been commonly supposed. This I particularly conclude from hence, that, instead of the suffusion of face which is the usual effect of such interruption, the face, in asthmatic fits, is often shrunk and pale. I conclude the same also from this, that, in asthmatic fits, blood letting does not commonly give so much relief as, upon the contrary supposition, might be expected.

MCCCLXXXIX. As I have alleged above, that a turgescence of the blood is frequently the exciting cause of asthmatic fits, so it might be supposed that a plethoric state of the system might have a great share in producing a turgescence of the blood in the lungs ; and especially, therefore, that blood letting might be a proper remedy in asthma. I allow it to be so in the first attacks of the disease ; but as the disease, by continuing, generally takes off the plethoric state of the system ; so, after the disease has continued for some time, I allege that blood letting becomes less and less necessary.

MCCCXC. Upon the supposition of asthmatics being in a plethoric state, purging might be supposed to prove a remedy in this disease ; but, both because the supposition

is not commonly well founded, and because purging is seldom found to relieve the vessels of the thorax, this remedy has not appeared to be well suited to asthmatics, and large purging has always been found to do much harm. But as asthmatics are always hurt by the stagnation and accumulation of matters in the alimentary canal, so costiveness must be avoided, and an open belly proves useful. In the time of fits, the employment of emollient and moderately laxative glysters has been found to give considerable relief.

MCCCXCI. As a flatulency of the stomach, and other symptoms of indigestion, are frequent attendants of asthma, and very troublesome to asthmatics ; so both for removing these symptoms, and for taking off all determination to the lungs, the frequent use of gentle vomits is proper in this disease. In certain cases, where a fit was expected to come on in the course of the night, a vomit given in the evening has frequently seemed to prevent it.

MCCCXCII. Blistering between the shoulders, or upon the breast, has been frequently employed to relieve asthmatics ; but in the pure spasmodic asthma we treat of here, I have rarely found blisters useful, either in preventing or relieving fits.

MCCCXCIII. Iffuses are certainly useful in obviating plethora ; but as such indications seldom arise in cases of asthma, so iffuses have been seldom found useful in this disease.

MCCCXCIV. As astmatic fits are so frequently excited by a turgescence of the blood, so the obviating and allaying of this by acids and neutral salts, seems to have been at all times the object of practitioners. See FLOYER *on the Asthma*.

MCCCXCV. Although a plethoric state of the system may seem to dispose to asthma, and the occasional turgescence of the blood may seem to be frequently the exciting cause of the fits ; yet it is evident, that the disease must have arisen chiefly from a peculiar constitution in the moving fibres of the bronchiaæ, disposing them, upon various occasions, to fall into a spasmodic constriction ;

and therefore, that the entire cure of the disease can only be expected from the correcting of that predisposition, or from correcting the preternatural mobility or irritability of the lungs in that respect.

MCCCXCVI. In cases wherein this predisposition depends upon original conformation, the cure must be difficult, and perhaps impossible ; but it may perhaps be moderated by the use of antispasmodics. Upon this footing, various remedies of that kind have been commonly employed, and particularly the feited gums ; but we have not found them of any considerable efficacy, and have observed them to be sometimes hurtful by their heating too much. Some other antispasmodics which might be supposed powerful, such as musk, have not been properly tried. The vitriolic ether has been found to give relief, but its effects are not lasting.

MCCCXCVII. As in other spasmodic affections, so in this, the most certain and powerful antispasmodic is opium. I have often found it effectual, and generally safe ; and if there have arisen doubts with respect to its safety, I believe they have arisen from not distinguishing between certain plethoric and inflammatory cases of dyspnœa, improperly named Asthma, and the genuine spasmodic asthma we treat of here.

LCCCXCVIII. As in many cases this disease depends upon a predisposition which cannot be corrected by our art, so in such cases the patient can only escape the disease by avoiding the occasional or exciting causes, which I have endeavored to point out above. It is however difficult to give any general rules here, as different asthmatics have their different idiosyncrasies with respect to externals. Thus one asthmatic finds himself easiest living in the midst of a great city, while another cannot breathe but in the free air of the country. In the latter case, however, most asthmatics bear the air of a low ground, if tolerably free and dry, better than that of the mountain.

MCCCXCIX. In diet also, there is some difference to be made with respect to different asthmatics. None of them bear a large or full meal, or any food that is of slow and

difficult solution in the stomach ; but many of them bear animal food of the lighter kinds, and in moderate quantity. The use of vegetables, which readily prove flatulent, are always very hurtful. In recent asthma, and especially in the young and plethoric, a spare, light, and cool diet is proper, and commonly necessary ; but after the disease has continued for years, asthmatics commonly bear, and even require a tolerably full diet, though in all cases a very full diet is very hurtful.

MCCCC. In drinking, water, or cool watery liquors, is the only safe and fit drink for asthmatics ; and all liquors ready to ferment, and become flatulent, are hurtful to them. Few asthmatics can bear any kind of strong drink ; and any excess in such is always very hurtful to them. As asthmatics are commonly hurt by taking warm or tepid drink, so both upon that account, and upon account of the liquors weakening the nerves of the stomach, neither tea nor coffee is proper in this disease.

MCCCCI. Asthmatics commonly bear no bodily motion easily, but that of the most gentle kind. Riding, however, on horseback, or going in a carriage, and especially sailing, are very often useful to asthmatics.



C H A P. VII.

OF THE CHINCOUGH*, OR HOOPING COUGH.

MCCCCII. THIS disease is commonly epidemic, and manifestly contagious. It seems to proceed from a contagion of a specific nature, and of singular quality. It does not, like most other contagions, necessarily produce a fever ; nor, does it, like most others occasion any eruption, or produce otherwise any evident change in the state of the human fluids. It has, in common with the catarrhal contagion, and with that of the measles, a

* A contagious disease ; convulsive and suffocating cough, with repeated sonorous inspiration, not unfrequently attended with vomiting. *Syn. Nos.*

peculiar determination to the lungs, but with particular effects there, very different from those of the other two : as will appear from the history of the disease now to be delivered.

MCCCCIV. This contagion, like several others, affects persons but once in the course of their lives ; and therefore, necessarily, children are most commonly the subjects of this disease : but there are many instances of it occurring in persons considerably advanced in life ; though it is probable, that the further that persons are advanced in life, they are the less liable to be affected with this contagion.

MCCCCV. The disease commonly comes on with the ordinary symptoms of a catarrh arising from cold ; and often, for many days, keeps entirely to that appearance ; and I have had instances of a disease which, though evidently arising from the chincough contagion, never put on any other form than that of a common catarrh.

This however seldom happens ; for generally in the second, and, at farthest in the third week after the attack, the disease puts on its peculiar and characteristic symptom, a convulsive cough. This is a cough in which the expiratory motions peculiar to coughing are made with more frequency, rapidity, and violence, than usual. As these circumstances, however, in different instances of coughing, are in very different degrees ; so no exact limits can be put to determine when the cough can be strictly said to be convulsive ; and it is therefore especially by another circumstance that the chincough is distinguished from every other form of cough. This circumstance is when many expiratory motions have been convulsively made, and thereby the air is in great quantity thrown out of the lungs, a full inspiration is necessarily and suddenly made ; which, by the air rushing in through the glottis with unusual velocity, gives a peculiar sound. This sound is somewhat different in different cases, but is in general called a Hoop ; and from it the whole of the disease is called the Hooping Cough. When this sonorous inspiration has happened, the convulsive coughing is again renewed, and continues in the same manner

as before, till a quantity of mucus is thrown up from the lungs, or the contents of the stomach are thrown up by vomiting. Either of these evacuations commonly puts an end to the coughing, and the patient remains free from it for some time after. Sometimes it is only after several alternate fits of coughing and hooping that expectoration or vomiting takes place ; but it is commonly after the second coughing that these happen, and put an end to the fit.

MCCCCV. When the disease, in this manner, has taken its proper form, it generally continues for a long time after, and generally from one month to three ; but sometimes much longer, and that with very various circumstances.

MCCCCVI. The fits of coughing return at various intervals, rarely observing any exact period. They happen frequently in the course of the day, and more frequently still in the course of the night. The patient has commonly some warning of their coming on ; and, to avoid that violent and painful concussion which the coughing gives to the whole body, he clings fast to any thing that is near to him, or demands to be held fast by any person that he can come at.

When the fit is over, the patient sometimes breathes fast, and seems fatigued for a little after : but in many this appears very little ; and children are commonly so entirely relieved, that they immediately return to their play, or what else they were occupied in before.

MCCCCVII. If it happens that the fit of coughing ends in vomiting up the contents of the stomach, the patient is commonly immediately after seized with a strong craving and demand for food, and takes it in very greedily.

MCCCCVIII. At the first coming on of this disease, the expectoration is sometimes none at all, or of a thin mucus only ; and while this continues to be the case, the fits of coughing are more violent, and continue longer : but commonly the expectoration soon becomes considerable, and a very thick mucus, often in great quantity, is

thrown up ; and as this is more readily brought up, the fits of coughing are of shorter duration.

MCCCCIX. The violent fits of coughing frequently interrupt the free transmission of the blood through the lungs, and thereby the free return of blood from the vessels of the head. This occasions that turgescence and suffusion of face which commonly attends the fits of coughing, and seems to occasion also those eruptions of blood from the nose, and even from the eyes and ears, which sometimes happen in this disease.

MCCCCX. This disease often takes place in the manner we have now described, without any pyrexia attending it ; but though Sydenham had seldom observed it, we have found the disease very frequently accompanied with pyrexia, sometimes from the very beginning, but more frequently only after the disease had continued for some time. When it does accompany the disease, we have not found it appearing under any regular intermittent form. It is constantly in some degree present ; but with evident exacerbations towards evening, continuing till next morning.

MCCCCXI. Another symptom very frequently attending the chincough, is a difficulty of breathing ; and that not only immediately before and after fits of coughing, but as constantly present, though in different degrees in different persons. I have hardly ever seen an instance of a fatal chincough, in which a considerable degree of pyrexia and dyspnœa had not been for some time constantly present.

MCCCCXII. When by the power of the contagion this disease has once taken place, the fits of coughing are often repeated, without any evident exciting cause : but in many cases, the contagion may be considered as giving a predisposition only ; and the frequency of fits depends in some measure upon various exciting causes ; such as, violent exercise ; a full meal ; the having taken in food of difficult solution ; irritations of the lungs by dust, smoke, or disagreeable odors of a strong kind ; and especially any considerable emotion of the mind.

MCCCCXIII. Such are the chief circumstances of this disease, and it is of various event, which, however, may be commonly foreseen by attending to the following considerations :

The younger that children are, they are in the greater danger from this disease ; and of those to whom it proves fatal, there are many more under two years old than above it.

The older that children are, they are the more secure against an unhappy event ; and this I hold to be a very general rule, though I own there are many exceptions to it.

Children born of phthisical and asthmatic parents, are in the greatest danger from this disease.

When the disease, beginning in the form of a catarrh, is attended with fever and difficult breathing, and with little expectoration, it often proves fatal, without taking on the form of the hooping cough ; but in most of such cases, the coming on of the convulsive cough and hooping, bringing on at the same time a more free expectoration, generally removes the danger.

When the disease is fully formed; if the fits are neither frequent nor violent, with moderate expectoration, and the patient, during the intervals of the fits, is easy, keeps his appetite, gets sleep, and is without fever or difficult breathing, the disease is attended with no danger ; and these circumstances becoming daily more favorable, the disease very soon spontaneously terminates.

An expectoration, either very scant or very copious, is attended with danger ; especially if the latter circumstance is attended with great difficulty of breathing.

Those cases in which the fits terminate by a vomiting, and are immediately followed by a craving of food, are generally without danger.

A moderate hemorrhagy from the nose often proves salutary, but very large hemorrhagies are generally very hurtful.

This disease coming upon persons under a state of much debility, has very generally an unhappy event.

The danger of this disease sometimes arises from the violence of the fits of coughing, occasioning apoplexy, epilepsy, or immediate suffocation ; but these accidents are very rare, and the danger of the disease seems generally to be in proportion to the fever and dyspnœa attending it.

MCCCCXIV. The cure of this disease has been always considered as difficult, whether the purpose be to obviate its fatal tendency when it is violent, or merely to shorten the course of it when it is mild. When the contagion is recent, and continues to act, we neither know how to correct, nor how to expel it ; and therefore the disease necessarily continues for some time : but it is probable, that the contagion in this, as in other instances, ceases at length to act ; and that then the disease continues, as in other convulsive affections, by the power of habit alone.

MCCCCXV. From this view of the matter I maintain, that the practice must be different, and adapted to two different indications, according to the period of the disease. At the beginning of the disease, and for some time after, the remedies to be employed must be such as may obviate the violent effects of the disease, and the fatal tendency of it ; but, after the disease has continued for some time, and is without any violent symptoms, the only remedies which can be required are those which may interrupt its course, and put an entire stop to it sooner than it would have spontaneously ceased.

MCCCCXVI. For answering the first indication. In plethoric subjects, or in others, when from the circumstances of the cough and fits it appears that the blood is difficultly transmitted through the lungs, blood letting is a necessary remedy ; and it may be even necessary to repeat it, especially in the beginning of the disease : but, as spasmodic affections do not commonly admit of much bleeding, so it is seldom proper in the chincough to repeat this remedy often.

MCCCCXVII. As costiveness frequently attends this disease, so it is necessary to obviate or remove it by laxatives employed ; and keeping an open belly is generally

useful : but large evacuations in this way are commonly hurtful.

MCCCCXVIII. To obviate or remove the inflammatory determination to the lungs that sometimes occurs in this disease, blistering is often useful, and even repeated blistering has been of service ; but issues have not so much effect, and should by no means supersede the repeated blistering that may be indicated. When blisters are proper, they are more effectual when applied to the thorax than when applied to any distant parts.

MCCCCXIX. Of all other remedies, emetics are the most useful in this disease ; both in general by interrupting the return of spasmodic affections, and in particular by determining very powerfully to the surface of the body, and thereby taking off determinations to the lungs. For these purposes, I think, full vomiting is frequently to be employed, and in the intervals necessary to be left between the times of full vomiting, nauseating doses of the atimonal emetics may be useful. I have never found the *sulphur auratum*, so much praised by Clossius, to be a convenient medicine, on account of the uncertainty of its dose ; and the tartar emetic, employed in the manner directed by the late Dr. Fothergill, has appeared to be more useful.

MCCCCXX. These are the remedies to be employed in the first stage of the disease, for obviating its fatal tendency, and putting it into a safe train. But in the second stage, when I suppose the contagion has ceased to act, and that the disease continues merely by the power of habit, a different indication arises, and different remedies are to be employed.

MCCCCXXI. This disease, which often continues for a long time, does not, in my opinion, continue during the whole of that time in consequence of the contagion's remaining in the body, and continuing to act in it. That the disease does often continue long after the contagion has ceased to act, and that too by the power of habit alone, appears to me probable from hence, that terror has frequently cured the disease ; that any considerable change in the state of the system, such as the

coming on of the smallpox, has also cured it ; and, lastly, that it has been cured by antispasmodic and tonic medicines ; whilst none of all these means of cure can be supposed either to correct or to expel a morbid matter, though they are evidently suited to change the state and habits of the nervous system.

MCCCCXXII. From this view we are directed to the indication that may be formed, and in a great measure to the remedies which may be employed in what we suppose to be the second stage of the disease. It may perhaps be alleged, that this indication of shortening the course of the disease, is not very important or necessary, as it supposes that the violence and danger is over, and, in consequence, that the disease will soon spontaneously cease. The last supposition, however, is not well founded ; as the disease, like many other convulsive and spasmodic affections, may continue for a long time by the power of habit alone, and by the repetition of paroxysms may have hurtful effects, more especially as the violence of paroxysms, and therefore their hurtful effects, may be much aggravated by various external causes that may be accidentally applied. Our indication, therefore, is proper ; and we proceed to consider the several remedies which may be employed to answer it.

MCCCXXIII. Terror may possibly be a powerful remedy, but it is difficult to measure the degree of it that shall be produced ; and, as a slight degree of it may be ineffectual, and a high degree of it dangerous, I cannot propose to employ it.

MCCCCXXIV. The other remedies which we suppose suited to our second indication, and which indeed have been frequently employed in this disease, are antispasmodics or tonics.

Of the antispasmodics, castor has been particularly recommended by Dr. Morris ; but in many trials we have not found it effectual.

With more probability musk has been employed : but whether it be from our not having it of a genuine kind, or not employing it in sufficiently large doses, I cannot determine ; but we have not found it commonly success-

ful. Of antispasmodics, the most certainly powerful is opium : and when there is no considerable fever or difficulty of breathing present, opium has often proved useful in moderating the violence of the chincough ; but I have not known it employed so as entirely to cure the disease.

If hemlock has proved a remedy in this disease, as we must believe from Dr. Butter's accounts, I agree with that author, that it is to be considered as an antispasmodic. Upon this supposition, it is a probable remedy ; and from the accounts of Dr. Butter and some others, it seems to have been often useful : but, in our trials, it has often disappointed us, perhaps from the preparation of it not having been always proper.

MCCCCXXV. Of the tonics, I consider the cup moss, formerly celebrated, as of this kind ; as also the bark of the mistletoe : but I have had no experience of either, as I have always trusted to the Peruvian bark. I consider the use of this medicine as the most certain means of curing the disease in its second stage ; and when there has been little fever present, and a sufficient quantity of the bark has been given, it has seldom failed of soon putting an end to the disease.

MCCCCXXVI. When convulsive disorders may be supposed to continue by the force of habit alone, it has been found that a considerable change in the whole of the circumstances and manner of life has proved a cure of such diseases ; and analogy has applied this in the case of the chincough so far, that a change of air has been employed, and supposed to be useful. In several instances I have observed it to be so ; but I have never found the effects of it durable, or sufficient to put an entire stop to the disease.

SECT. III.

Of the Spasmodic Affections in the Natural Functions.

C H A P. VIII.

OF THE PYROSIS*, or what is named in Scotland THE WATER BRASH.

MCCCCXXVII. THE painful sensations referred to the stomach, and which are probably occasioned by real affections of this organ, are of different kinds. Probably they proceed from affections of different natures, and should therefore be distinguished by different appellations; but I must own that the utmost precision in this matter will be difficult. In my essay towards a methodical Nosophy, I have, however, attempted it. For those pains that are either acute and pungent, or accompanied with a sense of distension, or with a sense of constriction, if they are at the same time not attended with any sense of acrimony or heat, I employ the appellation of Gastrodynia. To express those painful or uneasy sensations which seem to arise from a sense of acrimony irritating the part, or from such a sense of heat as the application of acrids, whether externally or internally applied, often gives, I employ the term of Cardialgia; and by this I particularly mean to denote those feelings which are expressed by the term Heartburn in the English language. I think the term Soda has been commonly employed by practical writers to express an affection attended with feelings of the latter kind. \

MCCCCXXVIII. Beside the pains denoted by the terms Gastrodynia, Periadynia, Cardialgia, and Soda, there is, I think, another painful sensation different from all of these, which is named by Mr. Sauvages Pyrosis Sueica; and his account of it is taken from Linnæus, who names it Cardialgia Sputatoria. Under the title of Pyrosis Mr.

* A burning pain of the epigastrium, with the eructation of a quantity of watery liquid, generally insipid, sometimes acrid. *Syn. Nef.*

Sauvages has formed a genus, of which the whole of the species, except the eighth, which he gives under the title of Pyrosis Suecica, are all of them species of the Gastrodynia or of the Cardialgia ; and if there is a genus to be formed under the title of Pyrosis, it can in my opinion comprehend only the species I have mentioned. In this case, indeed, I own that the term is not very proper ; but my aversion to introduce new names has made me continue to employ the term of Mr. Sauvages.

MCCCCXXIX. The Gastrodynia and Cardialgia I judge to be for the most part symptomatic affections ; and therefore have given them no place in this work : but the Pyrosis, as an idiopathic disease, and never before treated of in any system, I propose to treat of here.

MCCCCXXX. It is a disease frequent among people in lower life ; but occurs also, though more rarely, in people of better condition. Though frequent in Scotland, it is by no means so frequent as Linnaeus reports it to be in Lapland. It appears most commonly in persons under middle age, but seldom in any persons before the age of puberty. When it has once taken place, it is ready to recur occasionally for a long time after ; but it seldom appears in persons considerably advanced in life. It affects both sexes, but more frequently the female. It sometimes attacks pregnant women, and some women only when they are in that condition. Of other women, it more frequently affects the unmarried ; and of the married, most frequently the barren. I have had many instances of its occurring in women laboring under a fluor albus.

MCCCCXXXI. The fits of this disease usually come on in the morning and forenoon, when the stomach is empty. The first symptom of it is a pain at the pit of the stomach, with a sense of constriction, as if the stomach was drawn towards the back ; the pain is increased by raising the body into an erect posture, and therefore the body is bended forward. This pain is often very severe ; and, after continuing for some time it brings on an eructation of a thin watery fluid in considerable quantity. This fluid has sometimes an acid taste, but is very often

absolutely insipid. The eructation is for some time frequently repeated ; and does not immediately give relief to the pain which preceded it, but does so at length, and puts an end to the fit.

MCCCCXXXII. The fits of this disease commonly come on without any evident exciting cause : and I have not found it steadily connected with any particular diet. It attacks persons using animal food, but I think more frequently those living on milk and farinacea. It seems often to be excited by cold applied to the lower extremities ; and is readily excited by any considerable emotion of mind. It is often without any symptoms of dyspepsia.

MCCCCXXXIII. The nature of this affection is not very obvious ; but I think it may be explained in this manner; It seems to begin by a spasm of the muscular fibres of the stomach ; which is afterwards, in a certain manner, communicated to the blood vessels and exhalants, so as to increase the impetus of the fluids in these vessels, while a constriction takes place on their extremities. While therefore the increased impetus determines a greater quantity than usual of fluids into these vessels, the constriction upon their extremities allows only the pure watery parts to be poured out, analogous, as I judge, in every respect, to what happens in the diabetes hystericus.

MCCCCXXXIV. The practice in this disease is as difficult as the theory. The paroxysm is only to be certainly relieved by opium. Other antispasmodics, as vitriolic ether and volatile alkali, are sometimes of service, but not constantly so. Although opium and other antispasmodics relieve the fits, they have no effect in preventing their recurrence. For this purpose, the whole of the remedies of dyspepsia have been employed without success. Of the use of the nux vomica, mentioned as a remedy by Linnæus, I have had no experience.

C H A P. IX.

OF THE COLIC*.

MCCCCXXXV. THE principal symptom of this disease, is a pain felt in the lower belly. It is seldom fixed and pungent in one part, but is a painful distension in some measure spreading over the whole of the belly ; and particularly with a sense of twisting or wringing round the navel. At the same time, with this pain, the navel and teguments of the belly are frequently drawn inwards, and often the muscles of the belly are spasmodically contracted, and this in separate portions, giving the appearance of a bag full of round balls.

MCCCCXXXVI. Such pains, in a certain degree, sometimes occur in cases of diarrhoea and cholera ; but these are less violent and more transitory, and are named Gripings. It is only when more violent and permanent, and attended with costiveness, that they constitute colic. This is also commonly attended with vomiting, which in many cases is frequently repeated, especially when any thing is taken down into the stomach ; and in such vomitings, not only the contents of the stomach are thrown up, but also the contents of the duodenum, and therefore frequently a quantity of bile.

MCCCCXXXVII. In some cases of colic, the peristaltic motion is inverted through the whole length of the alimentary canal, in such a manner that the contents of the great guts, and therefore stercoraceous matter, is thrown up by vomiting ; and the same inversion appears still more clearly from this, that what is thrown into the rectum by glyster is again thrown out by the mouth. In these circumstances of inversion the disease has been named Ileus, or the Iliac Passion ; and this has been supposed to be a peculiar disease distinct from colic ; but to me it appears that the two diseases are owing to the same proximate cause, and have the same symptoms, only in different degree.

*Pain of the abdomen, principally twisting about the umbilicus ; vomiting ; costiveness. *Syn.* *Nos.*

MCCCCXXXVIII. The colic is often without any pyrexia attending it. Sometimes, however, an inflammation comes upon the part of the intestine especially affected ; and this inflammation aggravates all the symptoms of the disease, being probably what brings on the most considerable inversion of the peristaltic motion ; and, as the stercoreous vomiting is what especially distinguishes the ileus, this has been considered as always depending on an inflammation of the intestines. However, I can affirm, that as there are inflammations of the intestines without stercoreous vomiting, so I have seen instances of stercoreous vomiting without inflammation ; and there is therefore no ground for distinguishing ileus from colic, but as a higher degree of the same affection.

MCCCCXXXIX. The symptoms of the colic, and the dissections of bodies dead of this disease, show very clearly, that it depends upon a spasmodic constriction of a part of the intestines ; and that this therefore is to be considered as the proximate cause of the disease. In some of the dissections of persons dead of this disease, an intus susception has been remarked to have happened ; but whether this be constantly the case in all the appearances of ileus, is not certainly determined.

MCCCCXL. The colic has commonly been considered as being of different species, but I cannot follow the writers on this subject in the distinctions they have established. So far, however, as a difference of the remote cause constitutes a difference of species, a distinction may perhaps be admitted ; and accordingly in my Nosology I have marked seven different species : but I am well persuaded, that in all these different species the proximate cause is the same, that is, a spasmodic constriction of a part of the intestines ; and consequently, that in all these cases the indication of cure is the same, that is, to remove the constriction mentioned. Even in the several species named *Stercorea*, *Callosa*, and *Calculosa*, in which the disease depends upon an obstruction of the intestine, I am persuaded that these obstructions do not produce the symptoms of colic, excepting in so far as they produce spasmodic constrictions of the intestines ; and therefore, that the

means of cure in these cases, so far as they admit of cure, must be obtained by the same means which the general indication above mentioned suggests.

MCCCCLI. The cure, then, of the colic universally, is to be obtained by removing the spasmodic constrictions of the intestines ; and the remedies suited to this purpose may be referred to three general heads :

1. The taking off the spasm by various antispasmodic powers.
2. The exciting the action of the intestines by purgatives.
3. The employing mechanical dilatation.

MCCCCXLII. Before entering upon a more particular account of these remedies, it will be proper to observe, that in all cases of violent colic, it is adviseable to practise blood letting ; both as it may be useful in obviating the inflammation which is commonly to be apprehended, and even as it may be a means of relaxing the spasm of the intestine. This remedy may perhaps be improper in persons of a weak and lax habit, but in all persons of tolerable vigor it will be a safe remedy ; and in all cases where there is the least suspicion of an inflammation actually coming on, it will be absolutely necessary. Nay, it will even be proper to repeat it perhaps several times, if, with a full and hard pulse the appearance of the blood drawn, and the relief obtained by the first bleeding, shall authorise such repetition.

MCCCCXLIII. The antispasmodic powers that may be employed, are the application of heat in a dry or humid form, the application of blisters, the use of opium, and the use of mild oils.

The application of heat, in a dry form, has been employed by applying to the belly of the patient a living animal, or bladders filled with warm water, or bags of substances, which long retain their heat ; and all these have sometimes been applied with success ; but none of them seem to me so powerful as the application of heat in a humid form.

This may be employed either by the immersion of a great part of the body in warm water, or by foment-

ing the belly with cloths wrung out of hot water. The immersion has advantages, from the application of it to a greater part of the body, and particularly to the lower extremities : but immersion cannot always be conveniently practised, and fomentation may have the advantage of being longer continued ; and it may have nearly all the benefit of immersion, if it be at the same time applied both to the belly and to the lower extremities.

MCCCCXLIV. From considering that the teguments of the lower belly have such a connection with the intestines, as at the same time to be affected with spasmodic contractions, we perceive that blisters applied to the belly may have the effect of taking off the spasms both from the muscles of the belly and from the intestines ; and accordingly, blistering has often been employed in the colic with advantage. Analogous to this, rubefacients applied to the belly have been frequently found useful.

MCCCCXLV. The use of opium in colic may seem to be an ambiguous remedy. Very certainly it may for some time relieve the pain, which is often so violent and urgent, that it is difficult to abstain from the use of such a remedy. At the same time, the use of opium retards or suspends the peristaltic motion so much, as to allow the intestines to fall into constrictions ; and may therefore, while it relieves the pain, render the cause of the disease more obstinate. On this account, and further as opium prevents the operation of purgatives so often necessary in this disease, many practitioners are averse to the use of it, and some entirely reject the use of it, as hurtful. There are, however, others who think they can employ opium in this disease with much advantage.

In all cases where the colic comes on without any previous costiveness, and arises from cold, from passions of the mind, or other causes which operate especially on the nervous system, opium proves a safe and certain remedy ; but in cases which have been preceded by long costiveness, or where the colic, though not preced-

ed by costiveness, has however continued for some days without a stool, so that a stagnation of faeces in the colon is to be suspected, the use of opium is of doubtful effect. In such cases, unless a stool has been first procured by medicine, opium cannot be employed but with some hazard of aggravating the disease. However, even in those circumstances of costiveness, when, without inflammation the violence of the spasm is to be suspected, when vomiting prevents the exhibition of purgatives, and when with all this the pain is extremely urgent, opium is to be employed not only as an anodyne, but also as an antispasmodic, necessary to favor the operation of purgatives; and may be so employed, when, either at the same time with the opiate, or not long after it, a purgative can be exhibited.

Is the hyoscyamus, as often showing, along with its narcotic, a purgative quality, better suited to this disease than opium.

MCCCCXLVI. It is seemingly on good grounds that several practitioners have recommended the large use of mild oils in this disease, both as antispasmodics and as laxatives; and where the palate and stomach could admit them, I have found them very useful. But, as there are few Scottish stomachs that can admit a large use of oils, I have had few opportunities of employing them.

MCCCCXLVII. The second set of remedies adapted to the cure of colic, are purgatives; which, by exciting the action of the intestines, either above or below the obstructed place, may remove the constriction; and therefore these purgatives may be given either by the mouth, or thrown by glyster into the anus. As the disease is often seated in the great guts; as glysters, by having a more sudden operation, may give more immediate relief; and as purgatives given by the mouth are ready to be rejected by vomiting; so it is common, and indeed proper, to attempt curing the colic in the first place by glysters. These may at first be of the mildest kind, consisting of a large bulk of water, with some quantity of a mild oil; and such are sometimes sufficiently efficacious: however,

they are not always so ; and it is commonly necessary to render them more powerfully stimulant by the addition of neutral salts, of which the most powerful is the common or marine salt. If these saline glysters, as sometimes happens, are rendered again too quickly, and on this account or otherwise are found ineffectual, it may be proper, instead of these salts, to add to the glysters an infusion of senna, or of some other purgative that can be extracted by water. The antimonial wine may be sometimes employed in glysters with advantage. Hardly any glysters are more effectual than those made of turpentine properly prepared. When all other injections are found ineffectual, recourse is to be had to the injection of tobacco smoke ; and, when even this fails, recourse is to be had to the mechanical dilatation to be mentioned hereafter.

MCCCCXLVIII. As glysters often fail altogether in relieving this disease, and as even when they give some relief they are often imperfect in producing a complete cure ; so it is generally proper, and often necessary, to attempt a more entire and certain cure by purgatives given by the mouth. The more powerful of these, or, as they are called, the Draastic Purgatives, may be sometimes necessary ; but their use is to be avoided, both because they are apt to be rejected by vomiting, and because when they do not succeed in removing the obstruction, they are ready to induce an inflammation. Upon this account it is usual, and indeed proper, at least in the first place, to employ the milder and less inflammatory purgatives. None have succeeded with me better than the crystals of tartar, because this medicine may be conveniently given in small but repeated doses, to a considerable quantity ; and under this management, it is the purgative least ready to be rejected by vomiting, and much less so than the other neutral salts. If a stronger purgative be required, jalap, properly prepared, is less offensive to the palate, and fits better upon the stomach, than most other powerful purgatives. On many occasions of colic, nothing is more effectually purgative than a large dose of calomel. Some practitioners have attempted to remove

the obstruction of the intestines by antimonial emetics, exhibited in small doses, repeated at proper intervals ; and when these doses are not entirely rejected by vomiting, they often prove effectual purgatives.

When every purgative has failed, the action of the intestines has been effectually excited by throwing cold water on the lower extremities.

MCCCCXLIX. The third means of overcoming the spasm of the intestines in this disease, is by employing a mechanical dilatation ; and it has been frequently supposed, that quicksilver given in large quantity, might operate in this manner. I have not, however, found it successful ; and the theory of it is with me very doubtful. Some authors have mentioned the use of gold and silver pills, or balls, swallowed down ; but I have no experience of such practices, and I cannot suppose them a probable means of relief.

MCCCCL. Another means of mechanical dilatation, and a more probable measure, is by injecting a large quantity of warm water by a proper syringe, which may throw it with some force, and in a continued stream, into the rectum. Both from the experiments reported by the late Mr. De Haen, and from those I myself have had occasion to make, I judge this remedy to be one of the most powerful and effectual.

MCCCCLI. I have now mentioned all the several means that may be employed for the cure of the colic, considered as a genus ; but before I quit this subject, it may be expected that I should take notice of some of the species which may seem to require a particular consideration. In this view, it may be expected that I should especially take notice of that species named the Colic of Poitou, and particularly known in England by the name of the Devonshire Colic.

MCCCCLII. This species of the disease is certainly a peculiar one, both in respect of its cause and its effects ; but, as to the first, it has been lately so much the subject of investigation, and is so well ascertained by the learned physicians Sir George Baker and Dr. Hardy, that it is unnecessary for me to say any thing of it here.

With respect to the cure of it, so far as it appears in the form of a colic, my want of experience concerning it does not allow me to speak with any confidence on the subject ; but, so far as I can learn from others, it appears to me that it is to be treated by all the several means that I have proposed above for the cure of colic in general.

How far the peculiar effects of this disease are to be certainly foreseen and obviated, I have not properly learned ; and I must leave the matter to be determined by those who have had sufficient experience in it.



C H A P. X.

OF THE CHOLERA*.

MCCCCLIII. In this disease, a vomiting and purging concurring together, or frequently alternating with one another, are the chief symptoms. The matter rejected both upwards and downwards appears manifestly to consist chiefly of bile.

MCCCCLIV. From this last circumstance I conclude, that the disease depends upon an increased secretion of bile, and its copious effusion into the alimentary canal ; and, as in this it irritates and excites the motions above mentioned, I infer, that the bile thus effused in larger quantity is, at the same time, also of a more acrid quality. This appears likewise from the violent and very painful gripings that attend the disease, and which we can impute only to the violent spasmodic contractions of the intestines that take place here. These spasms are commonly communicated to the abdominal muscles, and very frequently to those of the extremities.

MCCCCLV. In the manner now described, the disease frequently proceeds with great violence, till the strength of the patient is greatly, and often suddenly, weakened ;

* Vomiting, and, at the same time frequent stools of biliary matter ; anxiety, gripes, and spasms of the inferior extremities. *Syn.* *No.*

while a coldness of the extremities, cold sweats, and faintings coming on, an end is put to the patient's life, sometimes in the course of one day. In other cases the disease is less violent, continues for a day or two, and then ceases by degrees, though such recoveries seldom happen without the assistance of remedies.

MCCCCLVI. The attacks of this disease are seldom accompanied with any symptoms of pyrexia ; and though, during the course of it, both the pulse and respiration are hurried and irregular, yet these symptoms are generally so entirely removed by the remedies that quiet the spasmodic affections peculiar to the disease, as to leave no ground for supposing that it had been accompanied by any proper pyrexia.

MCCCCLVII. This is a disease attending a very warm state of the air ; and in very warm climates, it may perhaps appear at any time of the year ; but even in such climates it is most frequent during their warmest seasons; and in temperate climates, it appears only in the warm seasons. Dr. Sydenham considered the appearances of this disease in England to be confined to the month of August ; but he himself observed it to appear sometimes towards the end of summer, when the season was unusually warm ; and that in proportion to the heat, the violence of the disease was greater. Others have observed that it appeared more early in summer, and always sooner or later, according as the great heats sooner or later set in.

MCCCCLVIII. From all these circumstances, it is, I think, very evident, that this disease is the effect of a warm atmosphere, producing some change in the state of the bile in the human body ; and the change may consist either in the matter of the bile being rendered more acrid, and thereby fitted to excite a more copious secretion ; or in the same matter its being prepared to pass off in larger quantity than usual.

MCCCCLIX. It has been remarked, that in warm climates and seasons, after extremely hot and dry weather, a fall of rain cooling the atmosphere seems especially to bring on this disease ; and it is very probable that an obstructed perspiration may have also a share in this,

though it is also certain that the disease does appear when no change in the temperature of the air, nor any application of cold, have been observed.

MCCCCLX. It is possible that, in some cases, the heat of the season may give only a predisposition, and that the disease may be excited by certain ingesta or other causes; but it is equally certain that the disease has occurred without any previous change or error, either in diet, or in the manner of life, that could be observed.

MCCCCLXI. The Nosologists have constituted a Genus under the title of Cholera, and under this have arranged as species every affection in which a vomiting and purging of any kind happened to concur. In many of these species, however, the matter evacuated is not bilious; nor does the evacuation proceed from any cause in the state of the atmosphere. Further, in many of these species also, the vomiting which occurs is not an essential, but merely an accidental symptom from the particular violence of the disease. The appellation of Cholera therefore should, in my opinion, be confined to the disease I have described above; which by its peculiar cause, and perhaps also by its symptoms, is very different from all the other species that have been associated with it. I believe that all the other species arranged under the title of Cholera by Sauvages or Sagar, may be properly enough referred to the genus of Diarrhoea; which we are to treat of in the next chapter.

The distinction I have endeavored to establish between the proper Cholera, and the other diseases that have sometimes got the same appellation, will, as I judge, supersede the question; Whether the Cholera, in temperate climates, happens at any other season than that above assigned?

MCCCCLXII. In the case of a genuine cholera, the cure of it has been long established by experience.

In the beginning of the disease, the evacuation of the redundant bile is to be favored by the plentiful exhibition of mild diluents, both given by the mouth and injected by the anus; and all evacuant medicines, employ-

ed in either way, are not only superfluous, but commonly hurtful.

MCCCCLXIII. When the redundant bile appears to be sufficiently washed out, and even before that, if the spasmodic affections of the alimentary canal become very violent, and are communicated in a considerable degree to other parts of the body, or when a dangerous debility seems to be induced, the irritation is to be immediately obviated by opiates, in sufficiently large doses, but in small bulk, and given either by the mouth or by glyster.

MCCCCLXIV. Though the patient be in this manner relieved, it frequently happens, that when the operation of the opium is over, the disease shows a tendency to return ; and, for at least some days after the first attack, the irritability of the intestines, and their disposition to fall into painful spasmodic contractions, seem to continue. In this situation, the repetition of the opiates, for perhaps several days, may come to be necessary ; and as the debility commonly induced by the disease favors the disposition to spasmodic affections, it is often useful and necessary, together with the opiates, to employ the tonic powers of the Peruvian bark.

C H A P. XI.

OF DIARRHOEA,* OR LOOSENESS.

MCCCCLXV. THIS disease consists in evacuations by stool, more frequent and of more liquid matter than usual. This leading and characteristic symptom is so diversified in its degree, in its causes, and in the variety of matter evacuated, that it is almost impossible to give any general history of the disease.

MCCCCLXVI. It is to be distinguished from dysentery, by not being contagious ; by being generally without fever ; and by being with the evacuation of the natural excrements, which are, at least for some time, retained in

* Frequent stools ; the disease is not contagious ; and there is no Primary pyrexia. *Syn. Nef.*

dysentery. The two diseases have been commonly distinguished by the gripings being more violent in the dysentery ; and they are commonly less violent and less frequent in diarrhoea : but as they frequently do occur in this also, and sometimes to a considerable degree, so they do not afford any proper distinction.

MCCCCLXVII. A diarrhoea is to be distinguished from cholera chiefly by the difference of their causes ; which, in cholera, is of one peculiar kind ; but in diarrhoea is prodigiously diversified, as we shall see presently. It has been common to distinguish cholera, by the evacuation downwards being of bilious matter, and by this being always accompanied with a vomiting of the same kind ; but it does not universally apply, as a diarrhoea is sometimes attended with vomiting, and even of bilious matter.

MCCCCLXVIII. The disease of diarrhoea, thus distinguished, is very greatly diversified ; but in all cases, the frequency of stools is to be imputed to a preternatural increase of the peristaltic motion in the whole, or at least a considerable portion, of the intestinal canal. This increased action is in different degrees, is often convulsive and spasmodic, and at any rate is a *motus abnormis* : for which reason, in the Methodical Nosology, I have referred it to the order of Spasmi, and accordingly treat of it in this place.

MCCCCLXIX. Upon the same ground, as I consider the disease named Lientery to be an increased peristaltic motion over the whole of the intestinal canal, arising from a peculiar irritability, I have considered it as merely a species of diarrhoea. The idea of a laxity of the intestinal canal being the cause either of lientery, or other species of diarrhoea, appears to me to be without foundation, except in the single case of frequent liquid stools from a palsy of the *sphincter ani*.

MCCCCLXX. The increased action of the peristaltic motion, I consider as always the chief part of the proximate cause of diarrhoea ; but the disease is further, and indeed chiefly, diversified by the different causes of this increased action ; which we are now to inquire into.

MCCCCLXXI. The several causes of the increased action of the intestines may be referred, I think, in the first place, to two general heads.

The *first* is, of the diseases of certain parts of the body, which, either from a consent of the intestines with these parts, or from the relation which the intestines have to the whole system, occasion an increased action in the intestines, without the transference of any stimulant matter from the primary diseased part to them.

The *second* head of the causes of the increased action of the intestines is of the stimuli of various kinds, which are applied directly to the intestines themselves.

MCCCCLXXII. That affections of other parts of the system may affect the intestines without the transference or application of any stimulant matter, we learn from hence, that the passions of the mind do in some persons excite diarrhoea.

MCCCCLXXIII. That diseases in other parts may in like manner affect the intestines, appears from the dentition of infants frequently exciting diarrhoea. I believe that the gout often affords another instance of the same kind ; and probably there are others also, though not well ascertained.

MCCCCLXXIV. The stimuli (MCCCCLXXI.) which may be applied to the intestines, are of very various kinds ; and are either,

1. Matters introduced by the mouth.
2. Matters poured into the intestines by the several excretaries opening into them.
3. Matters poured from certain preternatural openings made into them in certain diseases.

MCCCCLXXV. Of those (MCCCCLXXI. 1.) introduced by the mouth, the first to be mentioned are the aliments commonly taken in. Too great a quantity of these taken in, often prevents their due digestion in the stomach ; and by being thus sent in their crude, and probably acrid state, to the intestines, they frequently excite diarrhoea.

The same aliments, though in proper quantity, yet having too great a proportion, as frequently happens, of

faline or saccharine matter along with them prove stimulant to the intestines, and excite diarrhoea.

But our aliments prove especially the causes of diarrhoea, according as they, from their own nature, or from the weakness of the stomach, are disposed to undergo an undue degree of fermentation there, and thereby become stimulant to the intestines. Thus acescent aliments are ready to produce diarrhoea ; but whether from their having any directly purgative quality, or only as mixed in an over proportion with the bile, is not well determined.

MCCCCLXXVI. Not only the acescent, but also the putrescent disposition of the aliments, seems to occasion a diarrhoea ; and it appears that even the effluvia of putrid bodies, taken in any way in large quantity, have the same effect.

Are oils or fats, taken in as a part of our aliments, ever the cause of diarrhoea ? and if so, in what manner do they operate ?

MCCCCLXXVII. The other matters introduced by the mouth, which may be causes of diarrhoea, are those thrown in either as medicines, or poisons that have the faculty of stimulating the alimentary canal. Thus, in the list of the Materia Medica, we have a long catalogue of those named purgatives ; and in the list of poisons, we have many possessed of the same quality. The former, given in a certain quantity, occasion a temporary diarrhoea ; and given in very large doses, may occasion it in excess, and continue it longer than usual, producing that species of diarrhoea named a Hypercatharsis.

MCCCCLXXVIII. The matters (MCCCCLXXIV. 2.) poured into the cavity of the intestines from the excretaries opening into them, and which may occasion diarrhoea, are either those from the pancreatic or biliary duct, or those from the excretaries in the coats of the intestines themselves.

MCCCCLXXIX. What changes may happen in the pancreatic juice, I do not exactly know ; but I suppose that an acrid fluid may issue from the pancreas, even while still entire in its structure ; but more especially, when it

is in a suppurated, scirrhous, or cancerous state, that a very acrid matter may be poured out by the pancreatic duct, and occasion diarrhoea.

MCCCCLXXX. We know well, that from the biliary duct the bile may be poured out in greater quantity than usual ; and there is little doubt of its being also sometimes poured out of a more than ordinary acrid quality. It is very probable, that in both ways the bile is frequently a cause of diarrhoea.

Though I have said above that diarrhoea may be commonly distinguished from cholera, I must admit here, that as the causes producing that state of the bile which occasions cholera, may occur in all the different possible degrees of force, so as, on one occasion, to produce the most violent and distinctly marked cholera ; but upon another, to produce only the gentlest diarrhoea ; which, however, will be the same disease, only varying in degree; so I think it probable, that in warm climates, and in warm seasons, a *diarrhoea biliosa* of this kind may frequently occur, not to be always certainly distinguished from cholera.

However this may be, it is sufficiently probable, that, in some cases, the bile, without having been acted upon by the heat of the climate or season, may be redundant and acrid, and prove therefore a particular cause of diarrhoea.

MCCCCLXXXI. Besides bile from the several causes and in the conditions mentioned, the biliary duct may pour out pus, or other matter, from abscesses in the liver, which may be the cause of diarrhoea.

Practical writers take notice of a diarrhoea wherein a thin and bloody liquid is discharged ; which they suppose to have proceeded from the liver, and have therefore given the disease the name of Hepatirrhœa : but we have not met with any instance of this kind ; and therefore cannot properly say any thing concerning it.

MCCCCLXXXII. A second set of excretaries, from which matter is poured into the cavity of the intestines, are those from the coats of the intestines themselves ; and are either the exhalants proceeding directly from the

extremities of arteries, or the excretaries from the mucous follicles : and both these sources occur in prodigious number over the internal surface of the whole intestinal canal. It is probable that it is chiefly the effusion from these sources which, in most instances, gives the matter of the liquid stools occurring in diarrhoea.

MCCCCLXXXIII. The matter from both sources may be poured out in larger quantity than usual, merely by the increased action of the intestines, whether that be excited by the passions of the mind (MCCCCXXII.), by diseases in other parts of the system (MCCCCLXXI. 1.), or by the various stimulants mentioned MCCCCLXXV. and following ; or the quantity of matter poured out may be increased, not so much by the increased action of the intestines, as by an increased afflux of fluids from other parts of the system.

Thus cold applied to the surface of the body, and suppressing perspiration, may determine a greater quantity of fluids to the intestines.

Thus, in the *ischuria renalis*, the urine taken into the blood vessels is sometimes determined to pass off again by the intestines.

In like manner, pus or serum may be absorbed from the cavities in which they have been stagnant, and be again poured out into the intestines, as frequently happens, in particular with respect to the water of drop-sies.

MCCCCLXXXIV. It is to be observed here, that a diarrhoea may be excited not only by a copious afflux of fluids from other parts of the system, but likewise by the mere determination of various acrid matters from the mass of blood into the cavity of the intestines. Thus it is supposed that the morbid matter of fevers is sometimes thrown out into the cavity of the intestines, and gives a critical diarrhoea : and whether I do, or do not admit the doctrine of critical evacuations, I think it is probable that the morbid matter of the exanthemata is frequently thrown upon the intestines, and occasions diarrhoea.

MCCCCCLXXXV. It is to me further probable, that the putrescent matter diffused over the mass of blood in putred diseases, is frequently poured out by the exhalants into the intestines, and proves there the cause, at least in part, of the diarrhoea so commonly attending these diseases.

MCCCCCLXXXVI. Upon this subject of the matters poured into the cavity of the intestines, I have chiefly considered them as poured out in unusual quantity: but it is probable, that for the most part, they are also changed in their quality, and become of a more acrid and stimulant nature; upon which account especially it is that they excite, or at least increase a diarrhoea.

MCCCCCLXXXVII. How far, and in what manner the exhalant fluid may be changed in its nature and quality, we do not certainly know: but with respect to the fluid from the mucous excretaries, we know, that when poured out in unusual quantity, it is commonly, at the same time, in a more liquid and acrid form; and may prove therefore considerably irritating.

MCCCCLXXXVIII. Though the copious effusion of a more liquid and acrid matter from the mucous excretaries, be probably owing to the matter being poured out immediately, as it is secreted from the blood into the mucous follicles, without being allowed to stagnate in the latter, so as to acquire that milder quality and thicker consistence we commonly find in the mucus in its natural state; and although we might suppose that the excretions of a thin and acrid fluid should always be the effect of every determination to the mucous follicles, and of every stimulant applied to them; yet it is certain that the reverse is sometimes the case; and that, from the mucous follicles, there is frequently an increased excretion of a mucus, which appears in its proper form, of a mild, viscid, and thickish matter. This commonly occurs in the case of dysentery; and it has been observed to give a species of diarrhoea, which has been properly named the *Diarrhoea Mucosa*.

MCCCCLXXXIX. A third source of matter poured into the cavity of the intestines, and occasioning diarrhoea

(MCCCCLXXIV. 3.), is from those preternatural openings produced by diseases in the intestines or neighboring parts. Thus the blood vessels on the internal surface of the intestines may be opened by erosion, rupture, or anastomosis, and pour into the cavity their blood, which, either by its quantity or by its acrimony, whether inherent, or acquired by stagnation, may sometimes give a diarrhoea evacuating bloody matter. This is what I think happens in that disease which has been called the *Melæna* or *Morbus Niger*.

MCCCCXC. Another preternatural source of matter poured into the cavity of the intestines, is the rupture of abscesses seated either in the coats of the intestines themselves, or in any of the contiguous viscera, which, during an inflamed state, had formed an adhesion with some part of the intestines. The matter thus poured into their cavity may be various ; purulent, or finous, or both together, mixed at the same time with more or less of blood ; and in each of these states may be a cause of diarrhoea.

MCCCCXCI. Amongst the stimuli that may be directly applied to the intestines, and which by increasing their peristaltic motion, may occasion diarrhoea, I must not omit to mention worms, as having frequently that effect.

MCCCCXCII. I must also mention here a state of the intestines, wherein their peristaltic motion is preternaturally increased, and a diarrhoea produced ; and that is, when they are affected with an erythematic inflammation. With respect to the existence of such a state, and its occasioning diarrhoea, see what is said in cccxcviii. and following. Whether it is to be considered as a particular and distinct case of diarrhoea, or is always the same with some of those produced by one or other of the causes above mentioned, I have not been able to determine.

MCCCCXCIII. Lastly, by an accumulation of alimentary or of other matter poured into the cavity of the intestines from several of the sources above mentioned, a diarrhoea may be especially occasioned when the absorption

of the lacteals, or of other absorbents, is prevented either by an obstruction of their orifices, or by an obstruction of the mesenteric glands, through which alone the absorbed fluids can be transmitted.

In one instance of this kind, when the chyle prepared in the stomach and duodenum is not absorbed in the course of the intestines, but passes off in considerable quantity by the anus, the disease has been named the *Morbus Cœliacus*, or simply and more properly *Cœliaca*; which accordingly I have considered as a species of diarrhoea.

MCCCCXCIV. I have thus endeavored to point out the various species of disease that may come under the general appellation of Diarrhoea; and from that enumeration it will appear, that many, and indeed the greater part of the cases of diarrhoea, are to be considered as sympathetic affections, and to be cured only by curing the primary disease upon which they depend; of which however I cannot properly treat here. From our enumeration it will also appear, that many of the cases of diarrhoea which may be considered as idiopathic, will not require my saying much of them here. In many instances the disease is ascertained, and also the cause assigned, by the condition of the matter evacuated; so that what is necessary to correct or remove it, will be sufficiently obvious to practitioners of any knowledge. In short I do not find that I can offer any general plan for the cure of diarrhoea; and all that I can propose to do on this subject, is to give some general remarks on the practice that has been commonly followed in the cure of this disease.

MCCCCXCV. The practice in this disease has chiefly proceeded upon the supposition of an acrimony in the fluids, or of a laxity in the simple and moving fibres of the intestines; and the remedies employed have accordingly been correctors of particular acrimony, general demulcents, evacuants, by vomiting or purging, astringents, or opiates. Upon each of these kinds of remedy I shall now offer some remarks.

MCCCCXCVI. An acrid acrimony is, upon several occasions, the cause of diarrhoea, particularly in children ; and in such cases the absorbent earths have been very properly employed. The common, however, and promiscuous use of these has been very injudicious ; and where there is any putrescence, they must be hurtful.

MCCCCXCVII. The cases in which there is a putrid or putrescent acrimony prevailing, have been, I think, too seldom taken notice of ; and therefore the use of acids too seldom admitted. The acrimony to be suspected in bilious cases, is probably of the putrescent kind.

MCCCCXCVIII. The general correctors of acrimony are the mild diluents and demulcents. The former have not been so much employed in diarrhoea as they ought ; for, joined with demulcents, they very much increase the effects of the latter : and although the demulcents, both mucilaginous and oily, may by themselves be useful yet without the assistance of diluents, they can hardly be introduced in such quantity as to answer the purpose.

MCCCCXCIX. As indigestion and crudities present in the stomach, are so often the cause of diarrhoea, vomiting must therefore be frequently very useful in this disease.

In like manner, when the disease proceeds, as it often does, from obstructed perspiration, and increased afflux of fluids to the intestines, vomiting is perhaps the most effectual means of restoring the determination of the fluids to the surface of the body.

It is possible also, that vomiting may give some inversion of the peristaltic motion, which is determined too much downwards in diarrhoea ; so that upon the whole it is a remedy which may be very generally useful in this disease.

MD. Purging has been supposed to be more universally necessary, and has been more generally practised. This however, in my opinion, proceeds upon very mistaken notions with respect to the disease ; and such a practice seems to me for the most part superfluous, and in many cases very hurtful. It goes upon the supposition of an acrimony present in the intestines that ought to be carried out by purging : but, if that acrimony has either been

introduced by the mouth, or brought into the intestines from other parts of the body, purging can neither be a means of correcting nor of exhausting it ; and must rather have the effect of increasing its afflux, and of aggravating its effects. From whatever source the acrimony which can excite a diarrhoea proceeds, it may be supposed sufficient to evacuate itself, so far as that can be done by purging ; and as in cholera, so in the same kind of diarrhoea, it will be more proper to assist the evacuation by diluents and demulcents, than to increase the irritation by purgatives.

MDI. If, then, the use of purgative in diarrhoea may be considered, even when an acrimony is present, as superfluous, there are many other cases in which it may be extremely hurtful. If the irritability of the intestines shall, from affections in other parts of the system, or other causes, have been already very much increased, purgatives must necessarily aggravate the disease. In the case of lientery, nobody thinks of giving a purgative ; and in many cases of diarrhoea approaching to that, they must be equally improper. I have already observed, that when diarrhoea proceeds from an afflux of fluids to the intestines, whether in too great quantity, or of an acrid quality, purgatives may be hurtful ; and whoever therefore, considers the numerous and various sources from which acrid matter may be poured into the cavity of the intestines, will readily perceive, that in many cases of diarrhoea, purgatives may be extremely pernicious.

There is one case in particular to be taken notice of. When, from a general and acrid dissolution of the blood, the serous fluids run off too copiously into the cavity of the intestines, and excite that diarrhoea which attends the advanced state of hectic fever, and is properly called a Colliqueutive Diarrhoea ; I have, in such cases often seen purgatives given with the most baneful effects.

There is still another case of diarrhoea in which purgatives are pernicious ; and that is, when the disease depends, as we have alleged it sometimes may, upon an erythematic inflammation of the intestines.

I need hardly add, that if there be a case of diarrhoea depending upon a laxity of the solids, purgatives cannot there be of any service, and may do much harm. Upon the whole, it will I think, appear, that the use of purgatives in diarrhoea is very much limited ; and that the promiscuous use of them, which has been so common, is injudicious, and often pernicious. I believe the practice has been chiefly owing to the use of purgatives in dysenteric cases, in which they are truly useful ; because, contrary to the case of diarrhoea, there is in dysentery a considerable constriction of the intestines.

MDII. Another set of remedies employed in diarrhoea are astringents. There has been some hesitation about the employment of these in recent cases, upon the supposition that they might occasion the retention of an acrid matter that should be thrown out. I cannot, however, well understand or assign the cases in which such caution is necessary ; and I think that the power of astringents is seldom so great as to render their use very dangerous. The only difficulty which has occurred to me, with respect to their use, has been to judge of the circumstances to which they are especially adapted. It appears to me to be only in those where the irritability of the intestines depends upon a loss of tone : and this, I think, may occur either from the debility of the whole system, or from causes acting on the intestines alone. All violent or long continued spasmodic and convulsive affections of the intestinal canal necessarily induce a debility there ; and such causes often take place, from violent irritation, in colic, dysentery, cholera, and diarrhoea.

MDIII. The last of the remedies of diarrhoea that remain to be mentioned are opiates. The same objections have been made to the use of these, in recent cases of diarrhoea, as to that of astringents ; but on no good grounds ; for the effect of opiates, as astringent is never very permanent ; and an evacuation depending upon irritation, though it may be for some time suspended by opiates, yet always returns very soon. It is only by taking off irritability that opiates are useful in diarrhoea ; and therefore, when the disease depends upon an increase

of irritability alone, or when, though proceeding from irritation, that irritation is corrected or exhausted, opiates are the most useful and certain remedy. And though opiates are not suited to correct or remove an irritation applied, they are often of great benefit in suspending the effects of that irritation whenever these are violent : and, upon the whole, it will appear, that opiates may be very frequently, and with great propriety, employed in the cure of diarrhoea.

C H A P. XII.

OF THE DIABETES*.

MDIV. THIS disease consists in the voiding of an unusually large quantity of urine.

As hardly any secretion can be increased without an increased action of the vessels concerned in it, and as some instances of this disease are attended with affections manifestly spasmodic, I have had no doubt of arranging the diabetes under the order of Spasini.

MDV. This disease is always accompanied with a great degree of thirst, and therefore with the taking in of a great quantity of drink. This in some measure accounts for the very extraordinary quantities of urine voided ; but still, independent of this, a peculiar disease certainly takes place, as the quantity of urine voided does almost always exceed the whole of the liquids, and sometimes the whole of both solids and liquids, taken in.

MDVI. The urine voided in this disease is always very clear, and at first sight appears entirely without any color ; but, viewed in a certain light, it generally appears to be slightly tinged with a yellowish green, and in this

* As the nature of this complaint has been of late much illustrated, and its pathognomonic symptoms more attended to, I select the following definition from Dr. Rollo :

An insatiable desire of food ; perpetual thirst ; the urine increased in quantity, and sweetish, pulse frequent ; heat little increased ; skin dry with emaciation.

respect has been very properly compared to a solution of honey in a large proportion of water.

Examined by the taste, it is very generally found to be more or less sweet ; and many experiments that have now been made in different instances of the disease, show clearly that such urine contains, in considerable quantity, a saccharine matter, which appears to be very exactly of the nature of common sugar.

MDVII. Doctor Willis seems to me to have been the first who took notice of the sweetness of the urine in diabetes, and almost every physician of England has since taken notice of the same. It is to be doubted, indeed, if there is any case of idiopathic diabetes in which the urine is of a different kind. Though neither the ancients, nor, in the other countries of Europe, the moderns, till the latter were directed to it by the English, have taken notice of the sweetness of the urine, it does not persuade me, that either in ancient or in modern times the urine in diabetes was of another kind. I myself, indeed, think I have met with one instance of diabetes in which the urine was perfectly insipid ; and it would seem that a like observation had occurred to Dr. Martin Lister. I am persuaded, however, that such instances are very rare ; and that the other is by much the more common, and perhaps the almost universal occurrence. I judge, therefore, that the presence of such a saccharine matter may be considered as the principal circumstance in idiopathic diabetes ; and it gives at least the only case of that disease that I can properly treat of here, for I am only certain that what I am further to mention relates to such a case.

MDVIII. The antecedents of this disease, and consequently the remote causes of it, have not been well ascertained. It may be true that it frequently happens to men who, for a long time before, had been intemperate in drinking ; that it happens to persons of a broken constitution, or who, as we often express it, are in a cachectic state ; that it sometimes follows intermittent fevers ; and that it has often occurred from excess in the drinking of mineral waters. But none of these causes apply very generally to the cases that occur : such causes are not always, nor even frequently, followed by a diabetes ;

and there are many instances of diabetes which could not be referred to any of them. In most of the cases of this disease which I have met with, I could not refer it to any particular cause.

MDIX. This disease commonly comes on slowly, and almost imperceptibly, without any previous disorder. It often arises to a considerable degree, and subsists long without being accompanied with evident disorder in any particular part of the system. The great thirst which always, and the voracious appetite which frequently occurs in it, are often the only remarkable symptoms. Under the continuance of the disease, the body is often greatly emaciated ; and a great weakness also prevails. The pulse is commonly frequent ; and an obscure fever is for the most part present. When the disease proves fatal, it generally ends with a fever, in many circumstances, particularly those of emaciation and debility, resembling a hectic.

MDX. The proximate cause of this disease is not certainly or clearly known. It seems to have been sometimes connected with calculous affections of the kidneys ; and it is possible, that an irritation applied there may increase the secretion of urine. It perhaps often does so; but how it should produce the singular change that takes place in the state of the urine, is not to be easily explained. It certainly often happens that calculous matters are long present in the urinary passages, without having any such effect as that of producing diabetes in any shape.

Some have supposed that the disease occurs from a relaxed state of the secretory vessels of the kidneys ; and indeed the dissections of persons who had died of this disease have shown the kidneys in a very flaccid state. This, however, is probably to be considered as rather the effect than the cause of the disease.

That no topical affection of the kidneys has a share in producing this disease, and that a fault in the assimilation of the fluids is rather to be blamed, I conclude from hence, that even the solid food taken in increases the quantity of the urine voided, at the same time with an increase of the saccharine matter above mentioned.

MDXI. The diabetes has been supposed to be owing to a certain state of the bile ; and it is true, that this disease has sometimes occurred in persons who were at the same time affected with diseases of the liver : but this concurrence does not often take place ; and the diabetes frequently occurs separately from any affection of the liver. In twenty instances of diabetes which I have seen there was not in any one of them, any evident affection of the liver.

The explanation that has been offered of the nature and operation of the bile, in producing diabetes, is very hypothetical, and no ways satisfying.

MDXII. As I have already said, I think it probable, that in most cases the proximate cause of this disease is some fault in the assimilatory powers, or in those employed in converting alimentary matters into the proper animal fluids. This I formerly hinted to Dr. Dobson, and it has been prosecuted and published by him ; but I must own that it is a theory embarrassed with some difficulties which I cannot at present very well remove.

MDXIII. The proximate cause of diabetes being so little known or ascertained, I cannot propose any rational method of cure in the disease. From the testimony of several authors, I believe that the disease has been cured : but I believe also, that this has seldom happened ; and when the disease has been cured, I doubt much if it was effected by the several remedies to which these cures have been ascribed. In all the instances of this disease which I myself have seen, and in several others of which I have been informed, no cure of it has ever been made in Scotland, though many instances of it have occurred ; and in most of them the remedies recommended by authors have been diligently employed. I cannot, therefore, with any advantage, enter into a detail of these remedies ; and as the disease, together with its several circumstances, when they shall hereafter occur, is likely to become the subject of diligent investigation, I avoid going farther at present, and judge it prudent to suspend my opinion till I shall have more observations and experiments upon which I can form it more clearly.

NOTE ON DIABETES.

THE attention of the medical world has of late been forcibly called to this disease, by a new and successful method of cure, proposed by Dr. Rollo, who, in a learned and ingenious publication on this subject, has endeavored to establish a new and highly plausible theory of Diabetes, founded on powerful facts, and supported by its application to practice. We cannot do better than state his theory of the proximate cause of this disease in his own words : " The proximate cause of the Diabetes Mellitus, seems to us to consist in a morbidly increased action of the stomach, with consequent secretion, and vitiation of the gastric fluid, marked by an eagerness of appetite and acidity ; the direct effects of which are the formation or evolution of saccharine matter, with a certain defect of assimilation, preventing the healthy combinations, and exciting the immediate separation of the imperfectly formed chyle by the kidneys. The more remote consequences will be such changes in the natural structure of the parts, as may prevent the entire restoration of health." In almost every case of diabetes, a voracity of appetite is amongst the first symptoms ; hence we should be led to suspect a derangement of the organs of assimilation, rather than any primary morbid affection of the kidneys ; as in the latter case, this insatiable appetite, if it occurred at all, should follow and not precede the formation of the disease. The sympathy of the stomach with the kidneys is well known ; and anorexia, instead of insatiable-appetite, is the general consequence of the diseases of the latter. It has been objected, that saccharine matter has not been detected in the blood. Although, however, the experiments of late made to decide this point, have not actually ascertained the presence of sugar in the blood, they have shown that it deviates not a little from the healthy state. Dr. Rollo found that the blood taken from a diabetic patient, did not undergo the usual putrefactive process, unless the throwing out a slight animal smell for two or three days, with a mould on the surface of the crassum, be supposed marks of it." This certainly denotes that it was not properly animalized, and that it approached somewhat a vegetable nature. Dr. Dobson affirms, that he did detect saccharine matter in the blood of a diabetic patient ; and, although others have not been equally successful, their failure does not disprove the fact he has adduced. It is likewise easily conceivable, how a small quantity of sugar, when blended with such a large mass of fluid as the blood, may escape detection ; yet, when collected in the bladder, which is the proper reservoir for such excrementitious matters, it becomes manifest. It appears likewise, from experiments made by Dr. Rollo and Mr. Cruickshanks, by mixing certain quantities of sugar with blood, that sugar, and the purest diabetic extract, may be contained in the serum of the blood, without being detected by the taste ; that with a certain quantity of the former, it goes through fermentative changes ; and that

" it is probable, in two or three ounces of diabetic serum from blood, taken
" at a proper time after eating, the saccharine matter might be obtained."

Besides, the kidneys are to be considered not as secreting organs, but as mere filters, destined to separate the excrementitious part of the blood; hence the probability of their being so modified in their action as to form saccharine matter, is much invalidated.

It has been asserted, that Diabetes has been produced by injuries received on the region of the kidneys. It is probable, however, and in many cases it has been ascertained, that the disease produced by this cause is the Diabetes Insipidus, which appears to differ essentially from the Diabetes Mellitus. The observation, that the Mellitus has been marked to have passed into the Insipidus, does not militate against this conclusion as we can easily understand how the unusual irritation of saccharine matter may produce such derangement in the structure of the kidneys, as may continue the increased flow of the urine, after the cause which first excited it is removed.

It is likewise to be observed, that we cannot easily account for the sudden cessation of the disease from a diet of animal food, upon any other principle than its counteracting the formation or evolution of saccharine matter in the stomach. The saccharine qualities of the sugar will often disappear in two or three days after having recourse to animal food. The following, then are the facts which are thus briefly stated by Dr. Rollo in support of this doctrine :

1st, " That a stomach affection generally precedes the urinary characteristic symptoms of the disease.

2dly, " That a stomach affection always attends the disease, which materially differs from that, sympathetic of primary kidney affection.

3dly, " That a diet of animal food, with an entire abstinence from vegetable, or other matter capable of forming sugar in the stomach, removes speedily the general symptoms ; the saccharine matter, the quantity of the urine, and its unnatural state.

4thly, " That dissection has shown no morbid condition of the kidneys, but what may be referable to a continuance of increased action, from the application of a simple stimulus, and probably sympathy, augmenting merely the capacity of the vessels."

The indications of cure which Dr. Rollo has established, as founded on his experience, and on his idea of the proximate cause of Diabetes, are, 1st, To prevent the formation or evolution of saccharine matter in the stomach.

And, 2dly, To remove the morbidly increased action of the stomach, and restore it to a healthful condition.

As the morbid action of the stomach seems to be of such a nature as to produce saccharine matter from vegetables, they are to be strictly prohibited, and animal food alone is to be allowed. Rancid meat, old animal fats, and pork, are to be preferred, when the patient can be persuaded to persist in their use, as, by more quickly destroying the action of the stomach, they sooner remove the disease. The drink should consist of water which has been boiled, or a decoction of beef or mutton. As little exercise as possible is to be recommended. When the patient, from his former habits, feels languid and uneasy from drinking water alone, a little brandy may be added to it. All seasoning or condiments, except a little salt, should be avoided. Various medicines have been employed with a view of diminishing the morbidly increased action of the stomach. Dr. Rollo found the *hepatized ammonia* a powerful auxiliary in this respect. It is made by passing a stream of sulphurated hydrogen gas, through the aq. ammon. pur. until it takes up no more, or until the alkali is saturated. The sulphurated hydrogen gas may be obtained from artificial pyrites, or sulphuret of iron, dissolved in the muriatic acid. Mr. Cruickshanks describes the following method of preparing it : " The easiest method of making the artificial pyrites, is to raise a piece of iron, in a smith's forge, to a white heat, and then to rub it a-

" gainst the end of a roll of sulphur ; the iron, at this temperature, immediately combines with the sulphur, and forms globules of pyrites, which should be received into a vessel, filled with water ; those globules are to be reduced to powder, and introduced into the proof, to which a sufficient quantity of the muriatic acid is to be added.

" The dose to an adult should not at first exceed five or six drops, to be given three or four times a day ; and this dose to be increased, so as to produce slight giddiness ; but, as it is very powerful, and, in large doses, a dangerous medicine, great caution should be used in its exhibition."

As it appears from the ingenious experiments of Mr. Cruickshanks on sugar that the pure alkalis, lime water, and the different sulphurets, counteract the formation of sugar, these have been employed in Diabetes with considerable advantage. A drachm of the kali sulphuratum, dissolved in four quarts of water, may be used for common drink.

Emetics, as inducing sickness, and disturbing the usual action of the stomach have been employed with advantage. Opium likewise, as destroying the morbid appetite, has produced the best effects.

It is, upon the whole, to be observed, that, although there are many well authenticated cases, where the animal diet performed a cure, it appears in other cases to have failed. However, from the extreme reluctance with which patients are persuaded to persevere in this regimen, it is not easy to ascertain whether the failure was to be ascribed to the inveteracy of the disease, or to the want of resolution in the patients to persist in such an ungrateful course for a sufficient length of time.

C H A P. XIII.

OF THE HYSTERIA*, OR THE HYSTERIC DISEASE.

MDXIV. THE many and various symptoms which have been supposed to belong to a disease under this appellation, render it extremely difficult to give a general character or definition of it. It is, however, proper in all cases to attempt some general idea; and, therefore, by taking the most common form, and that concurrence of symptoms by which it is principally distinguished, I have formed a character in my system of Methodical Nosology, and shall here endeavor to illustrate it by giving a more full history of the phenomena.

MDXV. The disease attacks in paroxysms or fits. These commonly begin by some pain and fulness felt in the left side of the belly. From this a ball seems to move, with a grumbling noise, into the other parts of the belly, and making as it were various convolutions there, seems to move into the stomach; and more distinctly still rises up to the top of the gullet, where it remains for some time, and by its pressure upon the larynx gives a sense of suffocation. By the time that the disease has proceeded thus far, the patient is affected with a stupor and insensibility, while at the same time the body is agitated with various convulsions. The trunk of the body is writhed to and fro, and the limbs are variously agitated; commonly the convulsive motion of one arm and hand, is that of beating, with the closed fist, upon the breast very violently and repeatedly. This state continues for some time, and has during that time some remissions and renewals of the convulsive motions; but they at length cease, leaving the patient in a stupid and

* Grumbling of the belly; a sensation as if a ball were moving up and down the abdomen, and then ascending to the stomach and fauces, and there exciting a sense of suffocation; insensibility; convulsions; a flow of limpid urine; great mobility of mind. *Syn.* *Nos.*

seemingly sleeping state. More or less suddenly, and frequently with repeated sighing and sobbing, together with a murmuring noise in the belly, the patient returns to the exercise of sense and motion, but generally without any recollection of the several circumstances that had taken place during the fit.

MDXVI. This is the form of what is called an *hysterical paroxysm*, and is the most common form ; but its paroxysms are considerably varied in different persons, and even in the same person at different times. It differs, by having more or fewer of the circumstances above mentioned ; by these circumstances being more or less violent ; and by the different duration of the whole fit.

Before the fit, there is sometimes a sudden and unusually large flow of limpid urine. At the coming on of the fit, the stomach is sometimes affected with vomiting, the lungs with considerable difficulty of breathing, and the heart with palpitations. During the fit, the whole of the belly, and particularly the navel, is drawn strongly inwards ; the sphincter ani is sometimes so firmly constricted as not to admit a small glyster pipe, and there is at the same time an entire suppression of urine. Such fits are, from time to time, ready to recur ; and during the intervals, the patients are liable to involuntary motions, to fits of laughing and crying, with sudden transitions from the one to the other ; while sometimes false imaginations, and some degree of delirium, also occur.

MDXVII. These affections have been supposed peculiar to the female sex ; and indeed they most commonly appear in females ; but they sometimes, though rarely, attack also the male sex ; never, however, as I have observed, in the same exquisite degree.

In the female sex the disease occurs especially from the age of puberty to that of thirty five years ; and though it does sometimes, yet very seldom appears before the former or after the latter of these periods.

At all ages, the time at which it most readily occurs is that of the menstrual period.

The disease more especially affects the females of the most exquisitely sanguine and plethoric habits, and fre-

quently affects those of the most robust and masculine constitutions.

It affects the barren more than the breeding women, and therefore frequently young widows.

It occurs especially in those females who are liable to the Nymphomania ; and the Nosologists have properly enough marked one of the varieties of this disease by the title of *Hysteria Libidinosa*.

In the persons liable to the fits of this disease, it is readily excited by the passions of the mind, and by every considerable emotion, especially those brought on by surprise.

The persons liable to this disease acquire often such a degree of sensibility, as to be strongly affected by every impression that comes upon them by surprise.

MDXVIII. In this history, there appears to be a concurrence of symptoms and circumstances properly marking a very particular disease, which I think may be distinguished from all others. It seems to me to have been improperly considered by physicians as the same with some other diseases, and particularly with hypochondriasis. The two diseases may have some symptoms in common, but for the most part are considerably different.

Spasmodic affections occur in both diseases ; but neither so frequently, nor to so great a degree in hypochondriasis as in hysteria.

Persons liable to hysteria are sometimes affected at the same time with dyspepsia. They are often, however, entirely free from it ; but I believe this never happens to persons affected with hypochondriasis.

These different circumstances mark some difference in the two diseases ; but they are still more certainly distinguished by the temperament they attack and by the time of life at which they appear to be most exquisitely formed.

It has been generally supposed, that the two diseases differ only in respect of their appearing in different sexes : but this is not well founded : for although the hysteria appears most commonly in females, the male sex is not absolutely free from it, as I have observed; above and

although the hypochondriasis may be most frequent in men the instances of it in the female sex are very common.

MDXIX. From all these considerations, it must, I think, appear, that the hysteria may be very well, and properly distinguished from hypochondriasis.

Further, it seems to me to have been with great impropriety, that almost every degree of the irregular motions of the nervous system has been referred to the one or other of these two diseases. Both are marked by a peculiarity of temperament, as well as by certain symptoms commonly accompanying that ; but some of these, and many others usually marked by the name of nervous symptoms, may, from various causes, arise in temperaments different from that which is peculiar to either hysteria or hypochondriasis, and without being joined with the peculiar symptoms of either the one or the other disease : so that the appellations of Hysteric and Hypochondriac are very inaccurately applied to them. Under what view these symptoms are otherwise to be considered, I am not ready to determine ; but must remark, that the appellation of Nervous Diseases is too vague and undefined to be of any useful application.

MDXX. Having thus endeavored to distinguish hysteria from every other disease, I shall now attempt its peculiar pathology. With respect to this, I think it will, in the first place, be obvious, that its paroxysms begin by a convulsive and spasmodic affection of the alimentary canal, which is afterwards communicated to the brain, and to a great part of the nervous system. Although the disease appears to begin in the alimentary canal, yet the connection which the paroxysms so often have with the menstrual flux, and with the diseases that depend on the state of the genitals, shows, that physicians have at all times judged rightly in considering this disease as an affection of the uterus and other parts of the genital system.

MDXXI. With regard to this, however, I can go no farther. In what manner the uterus, and in particular the ovaria, are affected in this disease ; how the affection of these is communicated with particular circumstances to

the alimentary canal ; or how the affection of this, rising upwards, affects the brain, so as to occasion the particular convulsions which occur in this disease, I cannot pretend to explain.

But although I cannot trace this disease to its first causes, or explain the whole of the phenomena ; I hope, that with respect to the general nature of the disease, I may form some general conclusions, which may serve to direct our conduct in the cure of it.

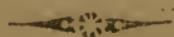
MDXXII. Thus, from a consideration of the predisposing and occasional causes, it will I think, appear, that the chief part of the proximate cause is a mobility of the system, depending generally upon its plethoric state.

MDXXIII. Whether this disease ever arises from a mobility of the system independent of any plethoric state of it, I cannot positively determine ; but in many cases that have subsisted for some time, it is evident that a sensibility, and consequently a mobility, are acquired, which often appear when neither a general plethora can be supposed to subsist, nor an occasional turgescence to have happened. However, as we have shown above, that a distension of the vessels of the brain seems to occasion epilepsy, and that a turgescence of the blood in the vessels of the lungs seems to produce asthma ; so analogy leads me to suppose, that a turgescence of blood in the uterus, or in other parts of the genital system, may occasion the spasmodic and convulsive motions which appear in hysteria. It will at the same time be evident, that this affection of the genitals must especially occur in plethoric habits ; and every circumstance mentioned in the history of the disease serves to confirm this opinion with respect to its proximate cause.

MDXXIV. From this view of the subject, the analogy of hysteria and epilepsy will readily appear ; and why, therefore, I am to say that the indications of cure are the same in both.

As the indications, so the several means of answering them, are so much the same in both diseases, that the same observations and directions, with regard to the choice and employment of these remedies, that have

been delivered above on the subject of epilepsy, will apply pretty exactly to hysteria ; and therefore need not be repeated here.



C H A P. XIV.

OF CANINE MADNESS AND HYDROPHOBIA.*

M D X X V . T HIS disease has been so exactly and fully described in books that are in every body's hands, that it is on no account necessary for me to give any history of it here ; and with respect to the pathology of it, I find that I can say nothing satisfying to myself, or that I can expect to prove so to others. I find also, with respect to the cure of this disease, that there is no subject in which the fallacy of experience appears more strongly than in this. From the most ancient to the present times, many remedies for preventing and curing this disease have been recommended under the sanction of pretended experience, and have perhaps also kept their credit for some time : but succeeding times have generally, upon the same ground of experience, destroyed that credit entirely ; and most of the remedies formerly employed are now fallen into absolute neglect. In the present age, some new remedies have been proposed, and have experience alleged to vouch for their efficacy ; but many doubts still remain with respect to this : and though I cannot determine in this matter from my own experience, I think it incumbent on me to give the best judgment I can form with respect to the choice of the remedies at present recommended.

* Horror and aversion to any drink, exciting painful convulsion of the pharynx ; generally arising from the bite of a mad animal.

Spec. 1. Hydrophobia Rabiofa, with a desire to bite, from the bite of a mad animal.

Spec. 2. Hydrophobia Simplex, without rage or any desire to bite.
Syn. Nef.

MDXXVI. I am, in the first place, firmly perfuaded, that the most certain means of preventing the consequences of the bite, is to cut out, or otherwise destroy the part in which the bite has been made. In this every body agrees ; but with this difference, that some are of opinion that it can only be effectual when it is done very soon after the wound has been made, and they therefore neglect it when this opportunity is miss'd. There have been, however, no experiments made proper to determine this matter ; and there are many considerations which lead me to think that the poison is not immediately communicated to the system ; and therefore, that this measure of destroying the part may be practised with advantage, even many days after the bite has been given.

MDXXVII. Whilst the state of our experience, with respect to several remedies now in use, is uncertain, I cannot venture to assert that any of these is absolutely ineffectual ; but I can give it as my opinion, that the efficacy of mercury, given very largely, and persisted in for a long time, both as a means of preventing the disease, and of curing it when it has actually come on, is better supported by experience than that of any other remedy now propos'd, or commonly employed.

B O O K IV.

OF VESANIAE.

OR OF THE

DISORDERS OF THE INTELLECTUAL FUNCTIONS.

C H A P. I.

OF VESANIA IN GENERAL.*

MDXXVIII. THE Nosologists, and Sauvages and Sagar, in a class of diseases under the title of VESANIAE, have comprehended the two orders of *Hallucinationes*, or False Preceptions, and of *Morositates*, or Erroneous Appetites and Passions ; and in like manner, Linnæus in his class of MENTALES, corresponding to the Vesaniæ of Sauvages, has comprehended the two orders of *Imaginarii* and *Pathetici*, nearly the same with the *Hallucinationes* and *Morositates* of that author. This, however, from several considerations, appears to me improper ; and I have therefore formed a class of Vesaniæ, nearly the same with the Paranoiae of Vogel, excluding from it the *Hallucinationes* and *Morositates*, which I have referrd to the Morbi Locales. Mr. Vogel has done the like, in separating from the Paranoiae the false perceptions and

* Disorders of the functions of the judgment, without pyrexia or coma.
Syn. Nof.

erroneous appetites ; and has thrown these into another class, to which he has given the title of Hyperæstheses.

M^DXXXIX. It is indeed true, that certain hallucinationes and morositates are frequently combined with what I propose to consider as strictly a vesania, or an erroneous judgment ; and sometimes the hallucinationes seem to lay the foundation of, and to form almost entirely the vesania. But as most part of the hallucinationes enumerated by the Nosologists are affections purely topical, and induce no other error of judgment beside that which relates to the single object of the sense or particular organ affected ; so these are certainly to be separated from the diseases which consist in a more general affection of the judgment. Even when the hallucinationes constantly accompany or seem to induce the vesania, yet being such as arise from internal causes, and may be presumed to arise from the same cause as the more general affection of the judgment, they are therefore to be considered as symptoms of this only.

In like manner I judge with respect to the morositates, or erroneous passions that accompany vesannia ; which, as consequences of a false judgment, must be considered as arising from the same causes, and as symptoms only of the more general affection.

There is, indeed, one case of a morositas which seems to induce a vesania, or more general affection of the judgment ; and this may lead us to consider the vesania, in this case, as a symptom of an erroneous appetite, but will not afford any good reason for comprehending the morositates in general under the vesaniæ, considered as primary diseases.

The limitation therefore of the class of vesaniæ to the lesion of our judging faculty, seems from every consideration to be proper.

The particular diseases to be comprehended under this class, may be distinguished according as they affect persons in the time of walking or of sleeping. Those which affect men awake, may again be considered, as they consist in an erroneous judgement, to which I shall give the

appellation of *Delirium*; or as they consist in a weakness or imperfection of judgment, which I shall name *Fatuity*. I begin with the consideration of Delirium.

MDXXX. As men differ greatly in the soundness and force of their judgment, so it may be proper here to ascertain more precisely what error or imperfection of our judging faculty is to be considered as morbid, and to admit of the appellations of Delirium and Fatuity. In doing this, I shall first consider the morbid errors of judgment, under the general appellation of Delirium, which has been commonly employed to denote every mode of such error.

MDXXXI. As our judgment is chiefly exercised in discerning and judging of the several relations of things, I apprehend that delirium may be defined to be,—In a person awake, a false or mistaken judgment of those relations of things, which, as occurring most frequently in life, are those about which the generality of men form the same judgment; and particularly when the judgment is very different from what the person himself had before usually formed.

MDXXXII. With this mistaken judgment of relations, there is frequently joined some false perceptions of external objects, without any evident fault in the organs of sense, and which seems therefore to depend upon an internal cause; that is, upon the imagination, arising from a condition in the brain, presenting objects which are not actually present. Such false perceptions must necessarily occasion a delirium, or an erroneous judgment, which is to be considered as the disease.

MDXXXIII. Another circumstance, commonly attending delirium, is a very unusual association of ideas. As, with respect to most of the affairs of common life, the ideas laid up in the memory are, in most men, associated in the same manner; so a very unusual association, in any individual, must prevent his forming the ordinary judgment of those relations which are the most common foundation of association in the memory: and therefore this unusual, and commonly hurried, association of ideas, usually is, and may be considered as a part of deliri-

um. In particular it may be considered as a certain mark of a general morbid affection of the intellectual organs, it being an interruption or perversion of the ordinary operations of memory, the common and necessary foundation of the exercise of judgment.

MDXXXIV. A third circumstance attending delirium, is an emotion or passion, sometimes of the angry, sometimes of the timid kind ; and, from whatever cause in the perception or judgment, it is not proportioned to such cause, either in the manner formerly customary to the person himself, or in the manner usual with the generality of other men.

MDXXXV. Delirium, then, may be more shortly defined—In a person awake, a false judgment arising from perceptions of imagination, or from false recollection, and commonly producing disproportionate emotions.

Such delirium is of two kinds ; as it is combined with pyrexia and comatose affections ; or, as it is entirely without any such combination. It is the latter case that we name *Insanity* ; and it is this kind of delirium only, that I am to treat of here.

MDXXXVI. Insanity may perhaps be properly considered as a genus comprehending many different species, each of which may deserve our attention ; but before proceeding to the consideration of particular species, I think it proper to attempt an investigation of the cause of insanity in general.

MDXXXVII. In doing this, I shall take it for granted, as demonstrated elsewhere, that although this disease seems to be chiefly, and sometimes solely, an affection of the mind ; yet the connection between the mind and body in this life is such, that these affections of the mind must be considered as depending upon a certain state of our corporeal part. See Halleri Prim. Lin. Physiolog. §. DLXX. See Boerhaavii Inst. Med. §. DLXXXI. DCXCVI.

MDXXXVIII. Admitting this proposition, I must in the next place assume another, which I likewise suppose to be demonstrated elsewhere. This is, that the part of our body more immediately connected with the mind, and therefore more especially concerned in every affection

of the intellectual functions, is the common origin of the nerves ; which I shall, in what follows, speak of under the appellation of the Brain.

MDXXXIX. Here, however, in assuming this last proposition, a very great difficulty immediately presents itself. Although we cannot doubt that the operations of our intellect always depend upon certain motions taking place in the brain, (see Gaub. Path. Med. § 523.) ; yet these motions have never been the objects of our senses, nor have we been able to perceive that any particular part of the brain has more concern in the operations of our intellect than any other. Neither have we attained any knowledge of what share the several parts of the brain have in that operation ; and, therefore, in this situation of our science, it must be a very difficult matter to discover those states of the brain that may give occasion to the various state of our intellectual functions.

MDXL. It may be observed, that the different state of the motion of the blood in the vessels of the brain, has some share in affecting the operations of the intellect ; and physicians, in seeking for the causes of the different states of our intellectual functions, have hardly looked further than into the state of the motion of the blood, or into the condition of the blood itself ; but it is evident that the operations of the intellectual functions ordinarily go on, and are often considerably varied, without our being able to perceive any difference either in the motions or in the condition of the blood.

MDXLI. Upon the other hand, it is very probable that the state of the intellectual functions depends chiefly upon the state and condition of what is termed the Nervous power, or, as we suppose, of a subtle very moveable fluid, included or inherent, in a manner we do not clearly understand, in every part of the medullary substance of the brain and nerves, and which, in a living and healthy man, is capable of being moved from every one part to every other of the nervous system.

MDXLII. With respect to this power, we have pretty clear proof that it frequently has a motion from the sen-

tient extremities of the nerves towards the brain, and thereby produces sensation ; and we have the same proof, that in consequence of volition, the nervous power has a motion from the brain into the muscles or organs of motion. Accordingly, as sensation excites our intellectual operations, and volition is the effect of these, and as the connection between sensation and volition, is always by the intervention of the brain, and of intellectual operations ; so we can hardly doubt, that these latter depend upon certain motions, and the various modification of these motions, in the brain.

MDXLIII. To ascertain the different states of these motions may be very difficult ; and physicians have commonly considered it to be so very mysterious, that they have generally despaired of attaining any knowledge with regard to it : but I consider such absolute despair, and the negligence it inspires, to be always very blameable ; and I shall now venture to go some length in the inquiry, hoping that some steps made with tolerable firmness, may enable us to go still further.

MDXLIV. To this purpose, I think it evident, that the nervous power, in the whole as well as in the several parts of the nervous system, and particularly in the brain, is at different times in different degrees of mobility and force. To these different states, I beg leave to apply the terms of *Excitement* and *Collapse*. To that state in which the mobility and force are sufficient for the exercise of the functions, or when these states are any way supernaturally increased, I give the name of *Excitement* ; and to that state in which the mobility and force are not sufficient for the ordinary exercise of the functions, or when they are diminished from the state in which they had been before, I give the name of *Collapse*. I beg, however, it may be observed, that by these terms I mean to express matters of fact only ; and without intending, by these terms, to explain the circumstance or condition, mechanical or physical, of the nervous power or fluid in these different states.

MDXLV. That these different states of excitement and collapse take place on different occasions, must, I think,

be manifest from numberless phenomena of the animal economy : but it is especially to our present purpose to observe, that the different states of excitement and collapse, are in no instance more remarkable, than in the different states of waking and sleeping. In the latter, when quite complete, the motion and mobility of the nervous power, with respect to the whole of what are called the Animal Functions, entirely cease, or, as I would express it, are in a state of collapse ; and are very different from the state of waking, which, in healthy persons, I would call a state of general and entire excitement.

MDXLVI. This difference in the states of the nervous power in sleeping and waking being admitted, I must, in the next place observe, that when these states are changed from the one into the other, as commonly happens every day, the change is hardly ever made instantaneously, but almost always by degrees, and in some length of time only : and this may be observed with respect to both sense and motion. Thus when a person is falling asleep, the sensibility is gradually diminished : so that, although some degree of sleep has come on, slight impressions will excite sensation, and bring back excitement ; which the same, or even stronger impressions, will be insufficient to produce when the state of sleep has continued longer, and is, as we may say, more complete. In like manner, the power of voluntary motion is gradually diminished. In some members it fails sooner than in others ; and it is some time before it becomes general and considerable over the whole.

The same gradual progress may be remarked in a person's coming out of sleep : The ears in this case are often awake before the eyes are opened or see clearly and the senses are often awake before the power of voluntary motion is recovered ; and it is curious to observe, that, in some cases, sensations may be excited without producing the ordinary association of ideas. See Mem. de Berlin, 1752.

MDXLVII. From all this, I think it will clearly appear, that not only the different states of excitement and col-

lapse can take place in different degrees, but that they can take place in different parts of the brain, or at least with respect to the different functions, in different degrees.

As I presume that almost every person has perceived the gradual approach of sleeping and waking, I likewise suppose every person has observed, that in such intermediate state of unequal excitement, there almost always occurs more or less of delirium, or dreaming, if any body chooses to call it so. There are in this state false perceptions, false associations, false judgments, and disproportionate emotions ; in short, all the circumstances by which I have above defined delirium.

This clearly shows, that delirium may depend, and I shall hereafter endeavor to prove, that it commonly does depend, upon some inequality in the excitement of the brain ; and that both these assertions are founded on this, that, in order to the proper exercise of our intellectual functions, the excitement must be complete, and equal in every part of the brain. For though we cannot say that the vestiges of ideas are laid up in different parts of the brain, or that they are in some measure diffused over the whole, it will follow upon either supposition that as our reasoning or intellectual operations, always require the orderly and exact recollection or memory of associated ideas ; so if any part of the brain is not excited, or not excitable, that recollection cannot properly take place, while, at the same time, other parts of the brain, more excited and excitable, may give false perceptions, associations, and judgments.

MDXLVIII. It will serve to illustrate this, that the collapse in sleep is more or less complete ; or that the sleep, as we commonly speak, is more or less profound : and, therefore, that, in many cases, though sleep takes place to a considerable degree, yet certain impressions do still take effect, and excite motions, or, if you will, sensations, in the brain ; but which sensations, upon account of the collapsed state of so great a part of the brain, are generally of the delirious kind, or dreams, consisting of false

perceptions associations, and judgments, that would have been corrected if the brain had been entirely excited.

Every one, I believe, has observed, that the most imperfect sleeps are those chiefly attended with dreaming : that dreams therefore, most commonly occur towards morning, when the complete state of sleep is passing away ; and, further, that dreams are most commonly excited by strong and uneasy impressions made upon the body.

I apprehend it may also be an illustration of the same thing, that, even in waking hours, we have an instance of an unequal state of excitement in the brain, producing delirium. Such, I think, occurs in the case of fever. In this, it is manifest, that the energy of the brain, or its excitement, is considerably diminished with respect to the animal functions : and it is accordingly upon this ground that I have explained above, in *XLV.* the delirium which so commonly attends fever. To what I have there said, I shall here only add, that it may serve to confirm my doctrine, that the delirium in fever comes on at a certain period of the disease only, and that we can commonly discern its approach, by a more than usual degree of it appearing in the time of the patient's falling into or coming out of sleep. It appears, therefore, that delirium, when it first comes on in fever, depends upon an inequality of excitement ; and it can hardly be doubted, that the delirium, which comes at length to prevail in the entirely weakened state of fevers, depends upon the same cause prevailing in a more considerable degree.

MDXLIX. From what has been now delivered, I hope it will be sufficiently evident, that delirium may be, and frequently is occasioned by an equality in the excitement of the brain.

How the different portions of the brain may at the same time be excited or collapsed in different degrees, or how the energy of the brain may be in different degrees of force, with respect to the several animal, vital, and natural functions, I cannot pretend to explain ; but it is sufficiently evident in fact, that the brain may be at one and the same time in different conditions with respect to these

functions. Thus in inflammatory diseases, when by a stimulus applied to the brain the force of the vital functions is preternaturally increased, that of the animal is either little changed, or considerably diminished. On the contrary, in many cases of mania, the force of the animal functions depending always on the brain, is prodigiously increased, while the state of the vital function in the heart is very little or not at all changed. I must therefore say again, that how difficult soever it may be to explain the mechanical or physical condition of the brain in such cases, the facts are sufficient to show that there is such an inequality as may disturb our intellectual operations.

MDL. I have thus endeavored to explain the general cause of Delirium ; which is of two kinds ; according as it is with or without pyrexia. Of the first I take no further notice here, having explained it as well as I could above in XLV.

I proceed now to consider that delirium which properly belongs to the class of Vesaniæ, and which I shall treat of under the general title of *Insanity*.

MDLI. In entering upon this subject, it immediately occurs, that in many instances of insanity, we find upon dissection after death, that peculiar circumstances had taken place in the general condition of the brain. In many cases, it has been found of a drier, harder, and firmer consistence, than what it is usually of in persons who had not been affected with that disease. In other cases, it has been found in a more humid, soft, and flaccid state ; and in the observations of the late Mr. Meckel*, it has been found considerably changed in its density or specific gravity. Whether these different states have been observed to be uniformly the same over the whole of the brain, I cannot certainly learn ; and suspect the dissectors have not always accurately inquired into this circumstance : but in several instances, it appears that these states had been different in different parts of the

* Memoir. de Berlin pour l'année 1764. It appeared in many instances of insane persons, that the medullary substance of the cerebrum was drier, and of a less specific gravity than in persons who had been always of sound judgment. Author.

brain ; and instances of this inequality will afford a confirmation of our general doctrine.

The accurate Morgagni has observed, that in maniacal persons the medullary portion of the brain is usually dry, hard, and firm ; And this he had so frequently observed, that he was disposed to consider it as generally the case. But in most of the particular instances which he has given, it appears, that, for the most part, while the cerebrum was of an unusually hard and firm consistence, the cerebellum was of its usual softness, and in many of the cases it was unusually soft and flaccid. In some other cases, Morgagni observes that while a part of the cerebrum was harder and firmer than ordinary, other parts of it were preternaturally soft.

MDLII. These observations tend to confirm our general doctrine : and there are others which I think will apply to the same purpose.

Upon the dissection of the bodies of persons who had labored under insanity, various organic affections have been discovered in particular parts of the brain ; and it is sufficiently probable, that such organic affections might have produced a different degree of excitement in the free and affected parts, and must have interrupted in some measure the free communication between the several parts of the brain, and in either way have occasioned insanity.

There have occurred so many instances of this kind, that I believe physicians are generally disposed to suspect organic lesions of the brain to exist in almost every case of insanity.

MDLIII. This, however, is probably a mistake : for we know that there have been many instances of insanity from which the persons have entirely recovered ; and it is difficult to suppose that any organic lesions of the brain had in such case taken place. Such transitory cases, indeed, render it probable, that a state of excitement, changeable by various causes, had been the cause of such instances of insanity.

MDLIV. It is indeed further asserted, that in many instances of insane persons, their brain had been examined

after death, without showing that any organic lesions had before subsisted in the brain, or finding that any morbid state of the brain then appeared. This, no doubt, may serve to show that organic lesions had not been the cause of the disease ; but it does not assure us that no morbid change had taken place in the brain : for it is probable, that the dissectors were not always aware of its being the general condition of hardness and density, as different in different parts of the brain, that was to be attended to, in order to discover the cause of the preceding disease ; and therefore many of them had not with this view examined the state of the brain, as Morgagni seems carefully to have done.

MDLV. Having thus endeavored to investigate the cause of insanity in general, it were to be wished that I could apply the doctrine to the distinguishing the several species of it, according as they depend upon the different state and circumstances of the brain, and thereby to the establishing of a scientific and accurately adapted method of cure. These purposes, however, appear to me to be extremely difficult to be attained ; and I cannot hope to execute them here. All I can do is to make some attempts, and offer some reflections, which further observation, and greater sagacity, may hereafter render more useful.

MDLVI. The ingenious Dr. Arnold has been commendably employed in distinguishing the different species of insanity as they appear with respect to the mind ; and his labors may hereafter prove useful, when we shall come to know something more of the different states of the brain corresponding to these different states of the mind ; but at present I can make little application of his numerous distinctions. It appears to me that he has chiefly pointed out and enumerated distinctions, that are merely varieties, which can lead to little or no variety of practice : and I am especially led to form the latter conclusion, because these varieties appear to me to be often combined together, and to be often changed into one another, in the same person ; in whom we must therefore suppose a general cause of the disease, which, so far

as it can be known, must establish the pathology and especially direct the practice.

MDLVII. In my limited views of the different states of insanity, I must go on to consider them under the two heads of Mania and Melancholia : and though I am sensible that these two genera do not comprehend the whole of the species of insanity, I am not clear in assigning the other species, which may not be comprehended under those titles. I shall, however, endeavor, on proper occasions as I go along, to point them out as well as I can.

C H A P. II.

OF MANIA, OR MADNESS*.

MDLVIII. THE circumstances which I have mentioned above in MDXXXV. as constituting delirium in general, do more especially belong to that kind of it which I shall treat of here under the title of MANIA.

There is sometimes a false perception or imagination of things present that are not ; but this is not a constant, nor even a frequent attendant of the disease. The false judgment, is of relations long before laid up in the memory. It very often turns upon one single subject : but more commonly the mind rambles from one subject to another, with an equally false judgment concerning the most part of them ; and as at the same time there is commonly a false association, this increases the confusion of ideas, and therefore the false judgments. What for the most part more especially distinguishes the disease, is a hurry of mind, in pursuing any thing like a train of thought, and in running from one train of thought to another. Maniacal persons are in general very irascible : but what more particularly produces their angry emotions is, that their false judgments leading to some action which is always pushed with impetuosity and violence ;

* Universal insanity. *Syn. Nef.*

when this is interrupted or restrained, they break out into violent anger and furious violence against every person near them, and upon every thing that stands in the way of their impetuous will. The false judgment often turns upon a mistaken opinion of some injury supposed to have been formerly received, or now supposed to be intended : and it is remarkable, that such an opinion is often with respect to their former dearest friends and relations ; and therefore their resentment and anger is particularly directed towards these. And although this should not be the case, they commonly soon lose that respect and regard which they formerly had for their friends and relations. With all these circumstances, it will be readily perceived, that the disease must be attended very constantly with that incoherent and absurd speech we call raving. Further, with the circumstances mentioned, there is commonly joined an unusual force in all the voluntary motions ; and an insensibility or resistance of the force of all impressions, and particularly a resistance of the powers of sleep, of cold, and even of hunger ; though indeed in many instances a voracious appetite takes place.

MDLIX. It appears to me, that the whole of these circumstances and symptoms point out a considerable and unusual excess in the excitement of the brain, especially with respect to the animal functions ; and it appears at the same time to be manifestly in some measure unequal, as it very often takes place with respect to these functions alone, while at the same time the vital and natural are commonly very little changed from their ordinary healthy state.

MDLX. How this excess of excitement is produced, it may be difficult to explain. In the various instances of what Sauvages has named the *Mania Metastatica*, and in all the instances I have mentioned in my Nosophy under the title of the *Mania Corporea*, it may be supposed that a morbid organic affection is produced in some part of the brain ; and how that may produce an increased or unequal excitement in certain parts of it, I have endeavored to explain above in MDLII. But I must at the same time acknowledge, that such remote causes of mania

have very rarely occurred ; and that therefore some other causes of the disease must be sought for.

The effects of violent emotions or passions of the mind have more frequently occurred as the remote causes of mania ; and it is sufficiently probable that such violent emotions, as they do often immediately produce a temporary increase of excitement, so they may, upon some occasions of their permanent inherence of frequent repetition, produce a more considerable and more permanent excitement, that is, a mania.

With respect to those causes of mania which arise in consequence of a melancholia which had previously long subsisted ; whether we consider that melancholia as a partial insanity, or as a long persisting attachment to one train of thinking, it will be readily perceived, that in either case such an increase of excitement may take place in so considerable a degree, and in so large a proportion of the brain, as may give occasion to a complete mania.

MDLXI. These considerations with regard to the remote causes, appear to me to confirm sufficiently our general doctrine of increased and unequal excitement in the mania which I have described above ; but I must own, that I have not exhausted the subject, and that there are cases of mania of which I cannot assign the remote causes : but, although I cannot in all cases explain in what manner the mania is produced, I presume, from the explanation given, and especially from the symptoms enumerated above, to conclude, that the disease described above depends upon an increased excitement of the brain ; an opinion in which I am the more confirmed, as I think it will point out the proper method of cure. At least I think it will most clearly explain the operation of those remedies, which, so far as I can learn from my own experience and that of others, have proved the most successful in this disease ; and, to illustrate this, I now enter upon the consideration of these remedies, and to make some remarks upon the proper manner of employing them.

MDLXII. Restraining the anger and violence of madmen is always necessary for preventing their hurting

themselves or others ; but this restraint is also to be considered as a remedy. Angry passions are always rendered more violent by the indulgence of the impetuous motions they produce ; and even in madmen the feeling of restraint will sometimes prevent the efforts which their passion would otherwise occasion. Restraint, therefore, is useful, and ought to be complete ; but it should be executed in the easiest manner possible for the patient, and the strait waistcoat answers every purpose better than any other that has yet been thought of. The restraining madmen by the force of other men, as occasioning a constant struggle and violent agitation, is often hurtful. Although, on many occasions, it may not be safe to allow maniacs to be upon their legs or to walk about, it is never desirable to confine them to a horizontal situation ; and whenever it can be admitted, they should be more or less in an erect posture. Although there may be no symptoms of any preternatural fulness or increased impetus of blood in the vessels of the brain, a horizontal posture always increases the fulness and tension of these vessels, and may thereby increase the excitement of the brain.

MDLXIII. The restraint mentioned requires confinement within doors, and it should be in a place which presents as few objects of sight and hearing as possible ; and particularly, it should be removed from the objects that the patient was formerly acquainted with, as these would more readily call up ideas and their various associations. It is for this reason that the confinement of madmen should hardly ever be in their usual habitation ; or if they are, that their apartment should be stripped of all its former furniture. It is also for the most part proper, that maniacs should be without the company of any of their former acquaintance ; the appearance of whom commonly excites emotions that increase the disease. Strangers may at first be offensive ; but in a little time they come to be objects either of indifference or of fear, and they should not be frequently changed.

MDLXIV. Fear being a passion that diminishes excitement, may therefore be opposed to the excess of it ; and

particularly to the angry and irascible excitement of maniacs. These being more susceptible of fear than might be expected, it appears to me to have been commonly useful. In most cases it has appeared to me necessary to employ a very constant impression of fear; and therefore to inspire them with the awe and dread of some particular persons, especially of those who are to be constantly near them. This awe and dread is therefore, by one means or other, to be acquired; in the first place, by their being the authors of all the restraints that may be occasionally proper; but sometimes it may be necessary to acquire it even by stripes and blows. The former, although having the appearance of more severity, are much safer than strokes or blows about the head. Neither of them, however, should be employed further than seems very necessary, and should be trusted only to those whose discretion can be depended upon. There is one case in which they are superfluous; that is, when the maniacal rage is either not susceptible of fear, or incapable of remembering the objects of it; for in such instances, stripes and blows would be wanton barbarity. In many cases of a moderate disease, it is of advantage that the persons who are the authors of restraint and punishment should be upon other occasions the bestowers of every indulgence and gratification that is admissible; never, however, neglecting to employ their awe when their indulgence shall have led to any abuse.

MDLXV. Although in mania, no particular irritation nor fulness of the system seem to be present, it is plain, that the avoiding all irritation and means of fulness is proper; and therefore, that a diet neither stimulating nor nourishing is commonly to be employed. As it may even be useful to diminish the fulness of the system, so both a low and a spare diet is likely in most cases to be of service.

MDLXVI. Upon the same principle, although no unusual fulness of the body be present, it may be of advantage to diminish even its ordinary fulness by different evacuations.

Blood letting, in particular, might be supposed useful ; and in all recent cases of mania it has been commonly practised, and I think with advantage ; but when the disease has subsisted for some time, I have seldom found blood letting of service. In those instances in which there is any frequency or fulness of pulse, or any marks of an increased impetus of the blood in the vessels of the head, blood letting is a proper and even a necessary remedy. Some practitioners, in such cases, have preferred a particular manner of blood letting, recommending arteriotomy, scarifying the hind head, or opening the jugular vein ; and where any fulness or inflammatory disposition in the vessels of the brain is to be suspected, the opening of the vessels nearest to them is likely to be of the greatest service. The opening, however, of either the temporal artery or the jugular vein in maniacal persons is very often inconvenient ; and it may generally be sufficient to open a vein in the arm, while the body is kept in somewhat of an erect posture, and such a quantity of blood drawn as nearly brings on a deliquium animi, which is always a pretty certain mark of some diminution of the fullness and tension of the vessels of the brain.

MDLXVII. For the same purpose of taking off the fulness and tension of these vessels of the brain, purging may be employed ; and I can in no other view understand the celebrated use of hellebore among the ancients. I cannot, however suppose any specific power in hellebore ; and can by no means find that, at least the black hellebore, so efficacious with us as it is said to have been at Anticyra. As costiveness, however, is commonly a very constant and hurtful attendant of mania, purgatives come to be sometimes very necessary ; and I have known some benefit obtained from the frequent use of pretty drastic purgatives. In this, however, I have been frequently disappointed ; and I have found more advantage from the frequent use of cooling purgatives, particularly the soluble tatar, than from more drastic medicines.

MDLXVIII. Vomiting has also been frequently employed in mania ; and by determining powerfully to the surface of the body, it may possibly diminish the fulness and

tension of the vessels, and thereby the excitement of the brain ; but I have never carried the use of this remedy so far as might enable me to judge properly of its effects. Whether it may do harm by impelling the blood too forcibly into the vessels of the brain, or whether by its general agitation of the whole system it may remove that inequality of excitement which prevails in mania, I have not had experience enough to determine.

MDLXIX. Frequent shaving of the head has been found of service in mania, and by promoting perspiration it probably takes off from the excitement of the internal parts. This however, it is likely, may be more effectually done by blistering, which more certainly takes off the excitement of subjacent parts. In recent cases it has been found useful by inducing sleep ; and when it has that effect, the repetition of it may be proper : but in maniacal cases that have lasted for some time, blistering has not appeared to me to be of any service ; and in such cases also I have not found perpetual blisters, or any other form of issue, prove useful.

MDLXX. As heat is the principal means of first exciting the nervous system, and establishing the nervous power and vital principle in animals ; so in cases of preternatural excitement, the application of cold might be supposed a proper remedy : but there are many instances of maniacs who have been exposed for a great length of time to a considerable degree of cold without having their symptoms any ways relieved. This may render in general the application of cold a doubtful remedy ; but it is at the same time certain, that maniacs have often been relieved, and sometimes entirely cured by the use of cold bathing, especially when administered in a certain manner. This seems to consist, in throwing the madman into the cold water by surprise ; by detaining him in it for some length of time ; and pouring water frequently upon the head, while the whole of the body except the head is immersed in the water ; and thus managing the whole process, so as that, with the assistance of some fear, a refrigerant effect may be produced. This, I can affirm, has been often useful ; and that the exter-

nal application of cold may be of service, we know further, from the benefit which has been received in some maniacal cases from the application of ice and snow to the naked head, and from the application of the noted Clay Cap.

Warm bathing also has been recommended by some practical writers, and in some rigid melancholic habits it may possibly be useful, or as employed in the manner prescribed by some, of immersing the lower parts of the body in warm water, while cold water is poured upon the head and upper parts. Of this practice, however, I have had no experience; and in the common manner of employing warm bathing I have found it rather hurtful to maniacs.

MDLXXI. According to my supposition that the disease depends upon an increased excitement of the brain, especially with respect to the animal functions, opium, so commonly powerful in inducing sleep, or a considerable collapse as to these functions, should be a powerful remedy of mania. That it has truly proved such, I believe from the testimony of Bernard Huet, whose practice is narrated at the end of Wepferi Historia Apoplecticorum. I leave to my readers to study this in the work I have referred to, where every part of the practice, is fully, and, as it appears to me, very judiciously delivered. I have never indeed carried the trial so far as seems to be requisite to an entire cure: but I have frequently employed in some maniacal cases, large doses of opium; and when they had the effect of inducing sleep, it was manifestly with advantage. At the same time, in some cases, from doubts, whether the disease might not depend upon some organic lesions of the brain, when the opium would be superfluous; and in other cases, from doubts, whether there might not be some inflammatory affection joined with the mania, when the opium would be hurtful; I have never pushed this remedy to the extent that might be necessary to make an entire cure.

MDLXXII. Camphire has been recommended as a remedy of mania, and there are instances alleged of its having performed an entire cure. As it appears from the

experiments of Beccaria that this substance is possessed of a sedative and narcotic virtue, these cures are not altogether improbable; but in several trials, and even in large doses, I have found no benefit from it; and excepting those in the Philosophical Transactions, No. 400, I have hardly met with any other testimonies in its favor.

MDLXXIII. I have been informed that some maniacs have been cured by being compelled to constant and even hard labor; and as a forced attention to the conduct of any bodily exercise, is a very certain means of diverting the mind from pursuing any train of thought, it is highly probable that such exercise may be useful in many cases of mania.

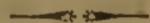
I must conclude this subject with observing, that even in several cases of complete mania, I have known a cure take place in the course of a journey carried on for some length of time.

MDLXXIV. These are the remedies which have been chiefly employed in the mania that has been above described, and I believe they have been employed promiscuously, without supposing that the mania was to be distinguished into different species. Indeed I am not ready to say how far it is to be so distinguished, but I shall offer one observation which may possibly merit attention.

It appears to me, that there are two different cases of mania that are especially different, according to the original temperament of the persons whom the disease affects. It perhaps occurs most frequently in persons of a melancholic or atrabilarian temperament; but it certainly does also often occur in persons of that very opposite temperament which physicians have named the Sanguine. According as the disease happens to occur in persons of the one or other of these temperaments, I apprehend it may be considered as of a different nature; and I believe, that accurate observation, employed upon a sufficient number of cases, would discern some pretty constant difference, either of the symptoms, or at least of the state of symptoms in the two cases. I imagine that false imaginations, particular aversions and resentments, are

more fixed and steady in the melancholic than in the sanguine; and that somewhat inflammatory is more commonly joined with mania in the sanguine than in the melancholic. If such difference, however, does truly take place, it will be obvious, that it may be proper to make some difference also in the practice. I am of opinion, that in the mania of sanguine persons, blood letting, and other antiphlogistic measures are more proper, and have been more useful than in the melancholic. I likewise apprehend that cold bathing is more useful in the sanguine than in the melancholic: but I have not had experience enough to ascertain these points with sufficient confidence.

I have only to add this other observation, that maniacs of the sanguine temperament recover more frequently and more entirely than those of the melancholic.



C H A P. III.

OF MELANCHOLY*, AND OTHER FORMS OF INSANITY.

MDLXXV. MELANCHOLY has been commonly considered as a partial insanity; and as such it is defined in my Nosology; but I now entertain doubts if this be altogether proper. By a partial insanity, I understand a false and mistaken judgment upon one particular subject, and what relates to it; whilst, on every other subject, the person affected judges as the generality of other men do. Such cases have certainly occurred; but I believe few in which the partial insanity is strictly limited. In many cases of general insanity, there is one subject of anger or fear, upon which the false judgment more particularly turns, or which is at least more frequently than any other, the prevailing object of delirium; and though, from the inconsistency which this principal object of delirium must produce, there is therefore also a great deal of insanity with regard to most other objects; yet this

* Partial insanity, without dyspepsia. See. Nof.

last is in very different degrees, both in different persons, and in the same person at different times. Thus, persons considered as generally insane, will, however, at times, and in some cases, pretty constantly judge properly enough of present circumstances and incidental occurrences ; though, when these objects engaging attention are not presented, the operations of imagination may readily bring back a general confusion, or recal the particular object of the delirium. From these considerations, I am inclined to conclude, that the limits between general and partial insanity, cannot always be so exactly assigned, as to determine when the partial affection is to be considered as giving a peculiar species of disease, different from a more general insanity.

MDLXXVI. When insanity neither strictly partial nor entirely nor constantly general, occurs in persons of a sanguine temperament, and is attended with agreeable, rather than with angry or gloomy emotions, I think such a disease must be considered as different from the Mania described above ; and also, though partial, must be held as different from the proper Melancholia to be mentioned hereafter.

MDLXXVII. Such a disease, as different from those described MDLIV. requires, in my opinion, a different administration of remedies ; and it will be proper for me to take particular notice of this here.

Although it may be necessary to restrain such insane persons as we have mentioned MDLXXVI. from pursuing the objects of their false imagination or judgment, it will hardly be requisite to employ the same force of restraint that is necessary in the impetuous and angry mania. It will be generally sufficient to acquire some awe over them, that may be employed, and sometimes even be necessary, to check the rambling of their imagination, and incoherency of judgment.

MDLXXVIII. The restraint just now mentioned as necessary, will generally require the patient's being confined to one place, for the sake of excluding the objects, and more particularly the persons, that might excite ideas connected with the chief objects of their delirium. At

the same time, however, if it can be perceived there are objects or persons that can call off their attention from the pursuit of their own disordered imagination, and can fix it a little upon some others, these last may be frequently presented to them : and, for this reason, a journey, both by its having the effect of interrupting all train of thought, and by presenting objects engaging attention, may often be useful. In such cases also, when the insanity, though more especially fixed upon one mistaken subject, is not confined to this alone, but is further apt to ramble over other subjects with incoherent ideas, I apprehend the confining or forcing such persons to some constant uniform labor, may prove an useful remedy.

MDLXXIX. When such cases as in MDLXXVI. occur in sanguine temperaments, and may therefore approach more nearly to Phrenitic Delirium ; so, in proportion as the symptoms of this tendency are more evident and considerable, bloodletting and purging will be the more proper and necessary.

MDLXXX. To this species of insanity, when occurring in sanguine temperaments, whether it be more or less partial I apprehend that cold bathing is particularly adapted ; while, in the partial insanity of melancholic persons, as I shall show hereafter, it is hardly admissible.

MDLXXXI. Having thus treated of a species of insanity, different, in my apprehension, from both the Mania and Melancholia, I proceed to consider what seems more properly to belong to this last.

MDLXXXII. The disease which I name Melancholia is very often a partial insanity only. But as, in many instances, though the false imagination or judgment seems to be with respect to one subject only, yet it seldom happens that this does not produce much inconsistency in the other intellectual operation : And as, between a very general and a very partial insanity, there are all the possible intermediate degrees, so it will be often difficult, or perhaps improper, to distinguish Melancholia by the character of Partial Insanity alone. If I mistake not, it must be chiefly distinguished by its occurring in persons

of melancholic temperament, and by its being always attended with some seemingly groundless, but very anxious fear.

MDLXXXIII. To explain the cause of this, I must observe, that persons of a melancholic temperament are, for the most part, of a serious thoughtful disposition, and disposed to fear and caution, rather than to hope and temerity. Persons of this cast are less moveable than others by any impressions, and are, therefore, capable of a closer or more continued attention to one particular object or train of thinking. They are even ready to be engaged in a constant application to one subject, and are remarkably tenacious of whatever emotions they happen to be affected with.

MDLXXXIV. These circumstances of the melancholic character seem clearly to show, that persons strongly affected with it may be readily seized with an anxious fear and that this, when much indulged, as is natural to such persons, may easily grow into a partial insanity.

MDLXXXV. Fear and dejection of mind, or a timid and desponding disposition, may arise in certain states, or upon certain occasions of mere debility ; and it is upon this footing that I suppose it sometimes to attend dyspepsia. But, in these cases, I believe the despondent disposition hardly ever arises to a considerable degree, or proves so obstinately fixed as when it occurs in persons of a melancholic temperament. In these last, although the fear proceed from the same dyspeptic feeling as in the other case, yet it will be obvious, that the emotion may rise to a more considerable degree ; that it may be more anxious, more fixed, and more attentive ; and, therefore, may exhibit all the various circumstances which I have mentioned in MCCXXII. to take place in the disease named HYPOCHONDRIASIS.

MDLXXXVI. In considering this subject formerly, in distinguishing Dyspepsia from Hypochondriasis, although the symptoms affecting the body be very much the same in both, and even those affecting the mind be somewhat similar, I found no difficulty in distinguishing the latter disease, merely from its occurring in persons

of a melancholic temperament. But I must now acknowledge, that I am at a loss to determine, how, in all cases, hypochondriasis and melancholia may be distinguished from one another, whilst the same temperament is common to both.

MDLXXXVII. I apprehend, however, that the distinction may be generally ascertained in the following manner :

The hypochondriasis I would consider as being always attended with dyspeptic symptoms ; and, though there may be, at the same time, an anxious melancholic fear, arising from the feeling of these symptoms, yet, while this fear is only a mistaken judgment with respect to the state of the person's own health, and to the danger to be from thence apprehended, I would still consider the disease as a hypochondriasis, and as distinct from the proper melancholia. But when an anxious fear and despondency arises from a mistaken judgment with respect to other circumstances than those of health, and more especially when the person is, at the same time, without any dyspeptic symptoms, every one will readily allow this to be a disease widely different from both dyspepsia and hypochondriasis, and it is what I would strictly name Melancholia.

MDLXXXVIII. In this there seems little difficulty ; but as an exquisitely melancholic temperament may induce a torpor and flowness in the action of the stomach, so it generally produces some dyspeptic symptoms, and from thence there may be some difficulty in distinguishing such a case from hypochondriasis. But I would maintain, however, that when the characters of the temperament are strongly marked, and more particularly when the false imagination turns upon other subjects than that of health ; or when, though relative to the person's own body, it is of a groundless and absurd kind ; then, notwithstanding the appearance of some dyspeptic symptoms, the case is still to be considered as that of a melancholia, rather than a hypochondriasis.

MDLXXXIX. The disease of melancholia, therefore, manifestly depends upon the general temperment of the

body : and although, in many persons, this temperament is not attended with any morbid affection either of mind or body ; yet when it becomes exquisitely formed, and is in a high degree, it may become a disease affecting both, and particularly the mind. It will therefore be proper to consider in what this melancholic temperament especially consists : and to this purpose, it may be observed, that in it there is a degree of torpor in the motion of the nervous power, both with respect to sensation and volition ; that there is a general rigidity of the simple solids ; and that the balance of the sanguiferous system is upon the side of the veins. But all these circumstances are the directly opposite of those of the sanguine temperament ; and must therefore also produce an opposite state of mind.

MDXC. It is this state of the mind, and the state of the brain corresponding to it, that is the chief object of our present consideration. But what that state of the brain is will be supposed to be difficult to explain ; and it may perhaps seem rash in me to attempt it.

I will however, venture to say, that it is probable the melancholic temperament of mind depends upon a drier and firmer texture in the medullary substance of the brain ; and that this perhaps proceeds from a certain want of fluid in that substance, which appears from its being of a lesser specific gravity than usual. That this state of the brain in melancholia does actually exist, I conclude, *first*, from the general rigidity of the whole habit ; and, *secondly*, from dissections, showing such a state of the brain to have taken place in mania, which is often no other than a higher degree of melancholia. It does not appear to me any ways difficult to suppose, that the same state of the brain may in a moderate degree give melancholia, and in a higher that mania which melancholia so often passes into ; especially if I shall be allowed further to suppose, that either a greater degree of firmness in the substance of the brain may render it susceptible of a higher degree of excitement, or that one portion of the brain may be liable to acquire a greater firmness than others, and consequently give occasion to that inequality of excitement, upon which mania so much depends.

MDXC_I. I have thus endeavored to deliver what appears to me most probable with respect to the proximate cause of melancholia ; and although the matter should in some respects remain doubtful, I am well persuaded that these observations may often be employed to direct our practice in this disease, as I shall now endeavor to show.

MDXC_{II}. In most of the instances of melancholia, the mind is to be managed very much in the same manner as I have advised above with regard to hypochondriasis ; but as in the case of proper melancholia, there is commonly a false imagination or judgment appearing as a partial insanity, it may be further necessary in such cases to employ some artifices for correcting such imagination or judgment.

MDXC_{III}. The various remedies for relieving the dyspeptic symptoms which always attend hypochondriasis will seldom be either requisite or proper in melancholia.

There is only one of the dyspeptic symptoms, which, though there should be no other, is very constantly present in melancholia, and that is costiveness. This it is always proper and even necessary to remove ; and I believe it is upon this account that the use of purgatives has been found so often useful in melancholia. Whether there be any purgatives peculiarly proper in this case, I dare not positively determine ; but with respect to the choice of purgatives in melancholia, I am of the same opinion that I delivered above on this same subject with respect to mania.

MDXC_{IV}. With respect to other remedies, I judge that blood letting will more seldom be proper in melancholia than in mania ; but how far it may be in any case proper, must be determined by the same considerations as in the case of mania.

MDXC_V. The cold bathing that I judged to be so very useful in several cases of insanity, is, I believe, in melancholia, hardly ever fit to be admitted ; at least while this is purely a partial affection, and without any marks of violent excitement. On the contrary, upon account

of the general rigidity prevailing in melancholia, it is probable that warm bathing may be often useful.

MDXCVI. With respect to opiates which I have supposed might often be useful in cases of mania, I believe they can seldom be properly employed in the partial insanities of the melancholic, except in certain instances of violent excitement, when the melancholia approaches nearly to the state of mania.

MDXCVII. In such cases of melancholia approaching to a state of mania, a low diet may sometimes be necessary; but as the employing a low diet almost unavoidably leads to the use of vegetable food, and as this in every torpid state of the stomach is ready to produce some dyspeptic symptoms, such vegetable food ought, in moderate cases of melancholia, to be used with some caution.

Though exercise, as a tonic power, is not proper either in hypochondriasis or melancholia; yet, with respect to its effects upon the mind, it may be extremely useful in both, and in melancholia is to be employed in the same manner that I have advised above in the case of hypochondriasis.

MDXCVIII. Having now delivered my doctrine with respect to the chief forms of insanity, I should in the next place proceed to consider the other genera of Amentia* and Oneirodynia†, which in the Nosology I have arranged under the order of Vesaniæ; but as I cannot pretend to throw much light upon these subjects and as they are seldom the objects of practice, I think it allowable for me to pass them over at present; and the particular circumstances of this work in some measure requires that I should do so.

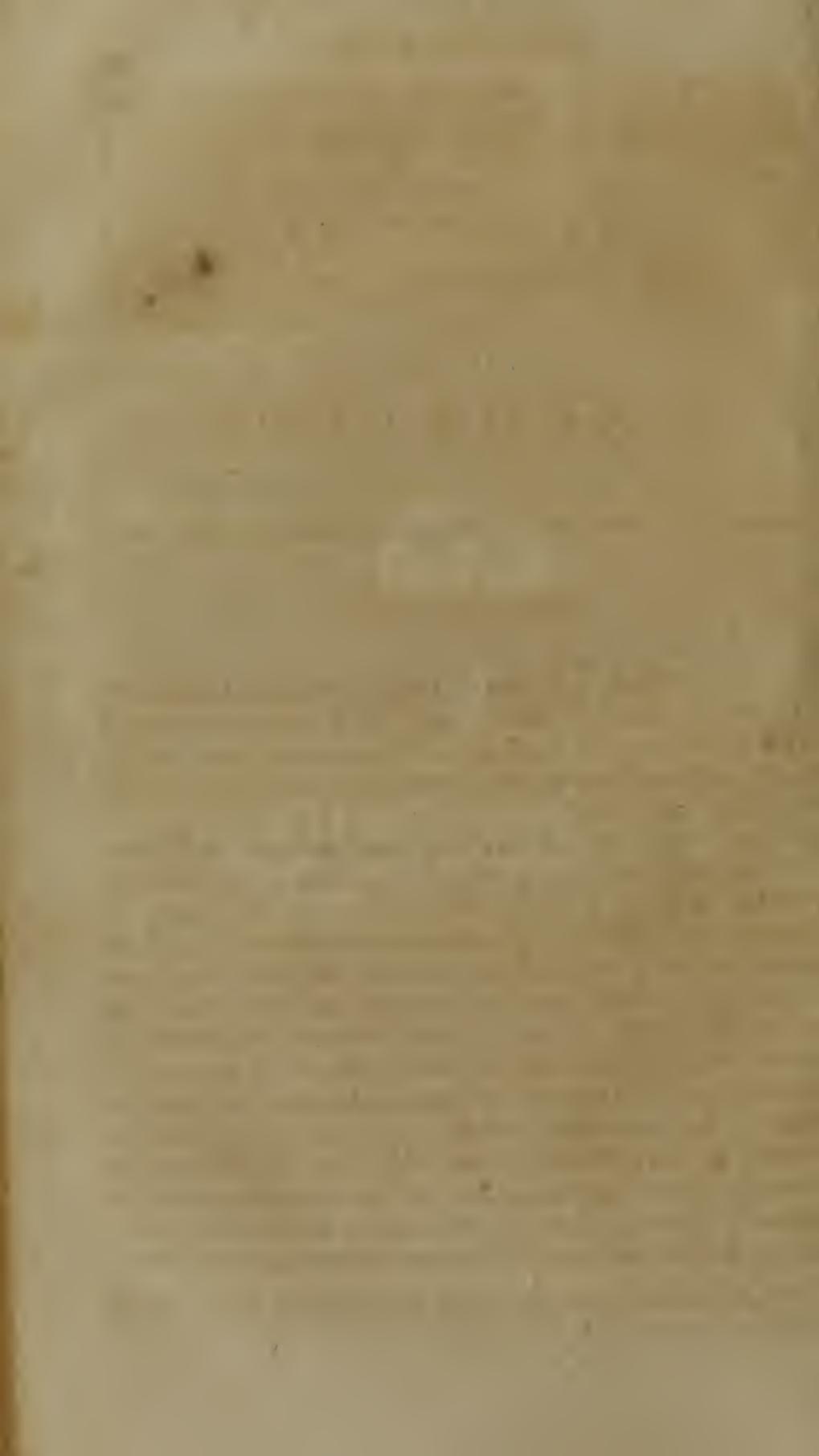
* Weakness of the judgment, whereby the relations of things are either not perceived or not remembered. *Syn. Nof.*

† The imagination, during sleep, unusually active or troublesome. *Syn. Nof.*

P A T III.

OF

C A C H E X I E S.



P A R T III.

OF

C A C H E X I E S.*

INTRODUCTION.

MDXCIX. UNDER this title I propose to establish a class of diseases, which consist in a depraved state of the whole, or of a considerable part of the habit of the body, without any primary pyrexia or neurosis combined with that state.

MDC. The term *Cachexy* has been employed by Linnæus and Sagar, as it had been formerly by other authors, for the name of a particular disease; but the disease to which these authors have affixed it, comes more properly under another appellation; and the term of *Cachexy* is more justly employed by Sauvages and Sagar for the name of a class. In this I have followed the last mentioned Nosologist, though I find it difficult to give such a character of the class as will clearly apply to all the species I have comprehended under it. This difficulty would be still greater, if in the class I have established under the title of *Cachexies*, I were to comprehend all the diseases that those other nosologists have done; but I am willing to be thought deficient rather than very incor-

* Depraved habit of the whole, or great part of the body, without primary pyrexia or neurosis. Syr. Nof.

rect. Those difficulties, however, which still remain in methodical nosology, must not affect us much in a treatise of practice. If I can here properly distinguish and describe the several species that truly and most commonly exist, I shall be the less concerned about the accuracy of my general classification : though at the same time this I think, is always to be attempted ; and I shall pursue it as well as I can.

BOOK I.

OF EMACIATIONS*.

MDCI. **E**MACIATION, or a considerable diminution of the bulk or plumpness of the whole body, is for the most part only a symptom of disease, and very seldom to be considered as a primary and idiopathic affection. Upon this account, according to my general plan, such a symptom might perhaps have been omitted in the Methodical Nosology ; but both the uncertainty of concluding it to be always symptomatic, and the consistency of system, made me introduce into the Nosology as others had done, an order under the title of *Marcores* ; and this renders it requisite now to take some notice of such diseases.

MDCII. Upon this occasion, therefore, I hope it may be useful to investigate the several causes of emaciation in all the different cases of disease in which it appears. And this I attempt, as the surest means of determining how far it is a primary, or a symptomatic affection only ; and even in the latter view, the investigation may be attended with some advantage.

MDCIII. The causes of emaciation may, I apprehend be referred to two general heads ; that is, either to a general deficiency of fluid in the vessels of the body, or to the particular deficiency of the oil in the cellular texture of it. These causes are frequently combined together ; but it will be proper, in the first place, to consider them separately.

* Wasting of the whole body. *Syn.* *Naf.*

MDCIV. As a great part of the body of animals is made up of vessels filled with fluids, the bulk of the whole must depend very much on the size of these vessels, and the quantity of fluids present in them : and it will therefore be sufficiently obvious, that a deficiency of the fluids in these vessels must, according to its degree, occasion a proportionate diminution of the bulk of the whole body. This however will appear still more clearly, from considering that in the living and sound body, the vessels every where seem to be preternaturally distended by the quantity of fluids present in them ; but being at the same time elastic, and constantly endeavoring to contract themselves, they must, on the withdrawing of the distending force, or in other words, upon a diminution of the quantity of fluids, be in proportion contracted and diminished in their size : And it may be further observed, that as each part of the vascular system communicates with every other part of it ; so every degree of diminution of the quantity of fluid in any one part, must in proportion diminish the bulk of the vascular system, and consequently of the whole body.

MDCV. The diminution and deficiency of the fluids may be occasioned by different causes : such as, first, by a due quantity of aliments not being taken in ; or by the aliment taken in, not being of a sufficiently nutritious quality. Of the want of a due quantity of aliment not being taken into the body, there is an instance in the *Atrophia lactantium Sauvagesii*, species 3. and many other examples have occurred of emaciation from want of food, occasioned by poverty, and other accidental causes.

With respect to the quality of food, I apprehend it arises from the want of nutritious matter in the food employed, that persons living very entirely on vegetables are seldom of a plump and succulent habit. .

MDCVI. A second cause of the deficiency of fluids may be, the aliments taken in not being conveyed to the blood vessels. This may occur from a person's being affected with a frequent vomiting ; which, rejecting the

food soon after it had been taken in, must prevent the necessary supply of fluids to the blood vessels.

Another cause, frequently interrupting the conveyance of the alimentary matter into the blood vessels, is an obstruction of the conglobate or lymphatic glands of the mesentery, through which the chyle must necessarily pass to the thoracic duct. Many instances of emaciation, seemingly depending upon this cause, have been observed by physicians, in persons of all ages, but especially in the young. It has also been remarked, that such cases have most frequently occurred in scrophulous persons, in whom the mesenteric glands are commonly affected with tumor or obstruction, and in whom, generally at the same time, scrophula appears externally. Hence the *Tabes scrophulosa Synop. Nosolog.* vol. ii. p. 266.: And under these I have put as synonimes *Tabes glandularis*, sp. 10. ; *Tabes mesenterica*, sp. 9. ; *Scrophula mesenterica*, sp. 4. ; *Atrophia infantilis*, sp. 13. ; *Atrophia rachitica*. sp. 8 ; *Tabes rachialgica*, sp. 16. At the same time, I have frequently found the case occurring in persons who did not shew any external appearance of scrophula, but in whom the mesenteric obstruction was afterwards discovered by dissection. Such also I suppose to have been the case, in the disease frequently mentioned by authors under the title of the *Atrophia infantum*. This has received its name from the time of life at which it generally appears ; but I have met with instances of it at fourteen years of age, ascertained by dissection. In several such cases which I have seen, the patients were without any scrophulous appearances at the time, or at any period of their lives before.

In the case of phthisical persons, I shall hereafter mention another cause of their emaciation ; but it is probable that an obstruction of the mesenteric glands which so frequently happens in such persons, concurs very powerfully in producing the emaciation that takes place.

Although a scrophulous taint may be the most frequent cause of mesenteric obstructions, it is sufficiently probable that other kinds of acrimony may produce the same, and the emaciation that follows.

It may perhaps be supposed, that the interruption of the chyle's passing into the blood vessels may be sometimes owing to a fault of the absorbents on the internal surface of the intestines. This, however cannot be readily ascertained : but the interruption of the chyle's passing into the blood vessels may certainly be owing to a rupture of the thoracic duct ; which when it does not prove soon fatal, by occasioning a hydrothorax, must in a short time produce a general emaciation.

MDCVII. A third cause of the deficiency of the fluids may be a fault in the organs of digestion, as not duly converting the aliment into a chyle fit to form in the blood vessels a proper nutritious matter. It is not, however, easy to ascertain the cases of emaciation which are to be attributed to this cause ; but I apprehend that the emaciation which attends long subsisting cases of dyspepsia, or of hypochondriasis, is to be explained chiefly in this way. It is this which I have placed in the Nosophy under the title of the *Atrophia debilium* ; and of which the *Atrophia nervosa*, Sauv. sp. 1. is a proper instance, and therefore put there as a synonime. But the other titles of *Atrophia lateralis*, Sauv. sp. 15. and *Atrophia senilis*, Sauv. sp. 11. are not so properly put there, as they must be explained in a different manner.

MDCVIII. A fourth cause of a deficiency of the fluids in the body, may be excessive evacuations made from it by different outlets ; and Sauvages has properly enumerated the following species, which we have put as synonimes under the title of *Atrophia inanitorum* ; as, *Tabes nutricum*, sp. 4. *Atrophia nutricum*, sp. 5. *Atrophia à leucorrhœa*, sp. 4. *Atrophia ab alvi fluxu*, sp. 6. *Atrophia à ptyalismo*, sp. 7. and, lastly. the *Tabes à sanguifluxu* ; which, it is to be observed, may arise not only from spontaneous hemorrhagies or accidental wounds, but also from blood lettings in too large a quantity, and too frequently repeated.

Upon this subject it seems proper to observe, that a meagre habit of body frequently depends upon a full perspiration being constantly kept up, though at the

same time a large quantity of nutritious aliment is regularly taken in.

MDCIX. Besides this deficiency of fluids from evacuations by which they are carried entirely out of the body, there may be a deficiency of fluid and emaciation in a considerable part of the body, by the fluids being drawn into one part, or collected into one cavity ; and of this we have an instance in the *Tabes à hydropo*, Sauv. sp. 5.

MDCX. In the Methodical Nosophology, among the other synonimes of the *Atrophia, inanitorum* I have set down the *Tabes dorsalis* ; but whether properly or not, I at present very much doubt. In the evacuation considered as the cause of this tabes, as the quantity evacuated is never so great as to account for a general deficiency of fluids in the body, we must seek for another explanation of it. And whether the effects of the evacuation may be accounted for, either from the quality of the fluid evacuated, or from the singularly enervating pleasure attending the evacuation, or from the evacuation's taking off the tension of parts, the tension of which has a singular power in supporting the tension and vigor of the whole body, I cannot positively determine ; but I apprehend that upon one or other of these suppositions the emaciation attending the *tabes dorsalis* must be accounted for ; and therefore that it is to be considered as an instance of the *Atrophia debilium*, rather than of the *Atrophia inanitorum*.

MDCXI. A fifth cause of a deficiency of fluids and of emaciations in the whole or in a particular part of the body, may be the concretion of the small vessels, either not admitting of fluids, or of the same proportion as before ; and this seems to me to be the case in the *Atrophia senilis*, Sauv. sp. 2. Or it may be a palsy of the larger trunks of the arteries rendering them unfit to propel the blood into the smaller vessels ; as is frequently the case of paralytic limbs, in which the arteries are affected as well as the muscles. The *Atrophia lateralis*, Sauv. sp. 15. seems to be of this nature.

MDCXII. A second general head of the causes of emaciation, I have mentioned in MDCII. to be a deficiency

of oil. The extent and quantity of the cellular texture in every part of the body, and therefore how considerable a part it makes in the bulk of the whole is now well known. But this substance in different circumstances, is more or less filled with an oily matter; and therefore the bulk of it, and in a great measure that of the whole body, must be greater or less according as this substance is more or less filled in that manner. The deficiency of fluids, for a reason to be immediately explained, is generally accompanied with a deficiency of oil; but physicians have commonly attended more to the latter cause of emaciation than to the other, that being usually the most evident; and I shall now endeavor to assign the several causes of the deficiency of oil as it occurs upon different occasions.

MDCXIII. The business of secretion in the human body is in general little understood, and in no instance less so than in that of the secretion of oil from blood, which does not appear previously to have contained it. It is possible, therefore, that our theory of the deficiency of oil may be in several respects imperfect; but there are certain facts that may in the mean time apply to the present purpose.

MDCXIV. First, it is probable, that a deficiency of oil may be owing to a state of the blood in animal bodies less fitted to afford a secretion of oil, and consequently to supply the waste of it that is constantly made. This state of the blood must especially depend upon the state of the aliments taken in, as containing less of oil or oily matter. From many observations made, both with respect to the human body and to that of other animals, it appears pretty clearly, that the aliments taken in by men and domestic animals, according as they contain more of oil, are in general more nutritious, and in particular are better fitted to fill the cellular texture of their bodies with oil. I might illustrate this, by a minute and particular consideration of the difference of alimentary matters employed; but it will be enough to give two instances. The one is, that the herbaceous part of vegetables, does not fatten animals, so much as the seeds of vegeta-

bles, which manifestly contain in any given weight a greater proportion of oil ; and a second instance is, that in general vegetable aliments do not fatten men so much as animal food, which generally contains a larger proportion of oil.

It will be obvious, that upon the same principles a want of food, or a less nutritious food, may not only occasion a general deficiency of fluids (MDCIV.), but must also afford less oil, to be poured into the cellular texture. In such cases, therefore, the emaciation produced, is to be attributed to both these general causes.

MDCXV. A second case of the deficiency of oil may be explained in this manner. It is pretty manifest, that the oil of the blood is secreted and deposited in the cellular texture in greater or lesser quantity, according as the circulation of the blood is faster or slower ; and therefore that exercise which hastens the circulation of the blood is a frequent cause of emaciation. Exercise produces this effect in two ways. 1st, By increasing the perspiration, and thereby carrying off a greater quantity of the nutritious matter, it leaves less of it to be deposited in the cellular texture ; thereby not only preventing an accumulation of fluids, but, as I have said above, causing a general deficiency of these which must also cause a deficiency of oil in the cellular texture. 2dly, It is well known, that the oil deposited in the cellular texture is upon many occasions, and for various purposes of the economy, again absorbed, and mixed or diffused in the mass of blood, to be from thence perhaps carried entirely out of the body by the several excretions. Now, among other purposes of the accumulation and re-absorption of oil, this seems to be one, that the oil is requisite to the proper action of the moving fibres in every part of the body ; and therefore that nature has provided for an absorption of oil to be made according as the action of the moving fibres may demand it. It will thus be obvious, that the exercise of the muscular and moving fibres every where, must occasion an absorption of oil ; and consequently that such exercise not only prevents the secretion of oil, as has been already said,

but may also cause a deficiency of it, by occasioning an absorption of what had been deposited ; and in this way, perhaps especially, does it produce emaciation.

MDCXVI. A third case of the deficiency of oil may occur from the following cause. It is probable, that one purpose of the accumulation of oil in the cellular texture of animals is, that it may, upon occasion, be again absorbed from thence, and carried into the mass of blood, for the purpose of enveloping and correcting any unusual acrimony arising and existing in the state of the fluids. Thus, in most instances in which we can discern an acrid state of the fluids, as in scurvy, cancer, syphilis, poisons, and several other diseases, we find at the same time a deficiency of oil and an emaciation take place ; which, in my apprehension, must be attributed to the absorption of oil, which the presence of acrimony in the body excites.

It is not unlikely that certain poisons introduced into the body, may subsist there ; and, giving occasion to an absorption of oil, may lay a foundation for the *Tabes à veneno*, Sauv. sp. 17.

MDCXVII. A fourth case of emaciation, and which I would attribute to a sudden and considerable absorption of oil from the cellular texture, is that of fever, which so generally produces emaciation. This may perhaps be in part attributed to the increased perspiration, and therefore to the general deficiency of fluids that may be supposed to take place : but whatever share that may have in producing the effect, we can, from the evident shrinking and diminution of the cellular substance, where ever it falls under our observation, certainly conclude, that there has been a very considerable absorption of the oil which had been before deposited in that substance. This explanation is rendered the more probable from this, that I suppose the absorption mentioned is necessarily made for the purpose of enveloping or correcting an acrimony, which manifestly does in many, and may be suspected to arise in all cases of fever. The most remarkable instance of emaciation occurring in fevers, is that which appears in the case of hectic fevers. Here the emaciation may be attributed to the profuse sweat-

ings that commonly attend the disease: but there is much reason to believe, that an acrimony also is present in the blood, which, even in the beginning of the disease, prevents the secretion and accumulation of oil; and in the more advanced states of it, must occasion a more considerable absorption of it; which, from the shrinking of the cellular substance, seems to go farther than in almost any other instance.

Upon the subject of emaciations from a deficiency of fluids, it may be observed, that every increased evacuation excites an absorption from other parts, and particularly from the cellular texture; and it is therefore probable, that a deficiency of fluids, from increased evacuations, produces an emaciation, not only by the waste of the fluids in the vascular system, but also by occasioning a considerable absorption from the cellular texture.

MDCXVIII. I have thus endeavored to explain the several cases and causes of emaciation; but I could not prosecute the consideration of these here in the order they are set down in the Methodical Nosology. In that work I was engaged chiefly in arranging the species of Sauvages; but it is my opinion now, that the arrangement there given is erroneous, in both combining and separating species improperly: and it seems to me more proper here to take notice of diseases, and put them together, according to the affinity of their nature, rather than by that of their external appearances. I doubt, if even the distinction of the Tabes and Atrophy, attempted in the Nosology, will properly apply; as I think there are certain diseases of the same nature, which sometimes appear with, and sometimes without fever.

MDCXIX. After having considered the various cases of emaciations, I should perhaps treat of their cure: but it will readily appear, that the greater part of the cases above mentioned, are purely symptomatic, and consequently that the cure of them must be that of the primary diseases upon which they depend. Of those cases that can any ways be considered as idiopathic, it will appear that they are to be cured entirely by removing the remote causes; the means of accomplishing which must be sufficiently obvious.

BOOK II.

OF INTUMESCENTIÆ*,

OR

GENERAL SWELLINGS.

INTRODUCTION.

MDCXX. THE swellings to be treated of in this place, are those which extend over the whole, or a great part of the body ; or such at least, as, though of small extent, are however of the same nature with those that are more generally extended.

The swellings comprehended under this artificial order, are hardly to be distinguished from one another, otherwise than by the matter they contain or consist of : and, in this view, I have divided the order into four sections, as the swelling happens to contain, 1st, Oil ; 2^d, Air ; 3^d, A watery fluid ; or, 4th, As the increased bulk depends upon the enlargement of the whole substance of certain parts, and particularly of one or more of the abdominal viscera.

* External swelling of the whole or great part of the body. *Syn. Nef.*

C H A P. I.

OF ADIPOSE SWELLINGS.*

MDCXXI. THE only disease to be mentioned in this chapter, I have, with other Nosologists, named *Polysarcia*; and in English it may be named Corpulency, or, more strictly, Obesity; as it is placed here upon the common supposition of its depending chiefly upon the increase of oil in the cellular texture of the body. This corpulency, or obesity, is in very different degrees in different persons, and is often considerable without being considered as a disease. There is, however, a certain degree of it, which will be generally allowed to be a disease; as, for example, when it renders persons, from a difficult respiration, uneasy in themselves, and, from the inability of exercise, unfit for discharging the duties of life to others: and, for that reason, I have given such a disease a place here. Many physicians have considered it as an object of practice, and as giving, even in no very high degree, a disposition to many diseases; I am of opinion, that it should be an object of practice more frequently than it has been, and therefore that it merits our consideration here.

MDCXXII. It may perhaps be alleged, that I have not been sufficiently correct, in putting the disease of corpulency as an *intumescensia pinguedinosa*, and therefore implying its being an increase of the bulk of the body, from an accumulation of oil in the cellular texture only. I am aware of this objection: and, as I have already said that emaciation (MDCII.) depends either upon a general deficiency of fluids in the vascular system, or upon a deficiency of oil in the cellular texture; so I should perhaps have observed farther, that the corpulency, or general fulness of the body, may depend upon the fulness of the vascular system as well as upon that of the cellular texture. This is true; and for the same reasons I ought,

* Swelling of the body from fat. *Syn.* *Ns.*

perhaps, after Linnæus and Sagar, to have set down plethora as a particular disease, and as an instance of morbid intumescence. I have, however, avoided this, as Sauvages and Vogel have done; because I apprehend that plethora is to be considered as a state of temperament only, which may indeed dispose to disease: but not as a disease in itself, unless, in the language of the Stahlians, it be a *plethora commota*, when it produces a disease accompanied with particular symptoms, which give occasion to its being distinguished by a different appellation. Further, it appears to me, that the symptoms which Linnæus, and more particularly those which Sagar employs in the character of plethora, never do occur but when the *intumescentia pinguedinosa* has a great share in producing them. It is, however, very necessary to observe here, that plethora and obesity are generally combined together; and that in some cases of corpulency, it may be difficult to determine which of the causes has the greatest share in producing it. It is indeed very possible, that a plethora may occur without great obesity; but I apprehend, that obesity never happens to a considerable degree, without producing a *plethora ad spatium* in a great part of the system of the aorta, and therefore a *plethora ad molem* in the lungs, and in the vessels of the brain.

MDCXXIII. In attempting the cure of polysarcia, I am of opinion, that the conjunction of plethora and obesity, in the manner just now mentioned, should be constantly attended to; and when the morbid effects of the plethoric habit are threatened, either in the head or lungs, that blood letting is to be practised: but, at the same time, it is to be observed, that persons of much obesity do not bear blood letting well; and, when the circumstances I have mentioned do not immediately require it, the practice, upon account of obesity, alone, is hardly ever to be employed. The same remark is to be made, with respect to any other evacuations that may be proposed for the cure of corpulency; for, without the other means I am to mention, they can give but a very imperfect relief; and, in so far as they either empty or weak-

en the system, they may favor the return of plethora, and the increase of obesity.

MDCXXIV. Polysarcia, or corpulency, whether it depend upon plethora or obesity, whenever it can either be considered as a disease, or threatens to induce one, is to be cured, or the effects of it are to be obviated, by diet and exercise. The diet must be sparing ; or rather, what is more admissible, it must be such as affords little nutritious matter. It must, therefore, be chiefly, or almost only, of vegetable matter, and at the very utmost of milk. Such a diet should be employed, and generally ought to precede exercise : for obesity does not easily admit of bodily exercise ; which is, however, the only mode that can be very effectual. Such, indeed, in many cases, may seem difficult to be admitted ; but I am of opinion, that even the most corpulent may be brought to bear it, by at first attempting it very moderately, and increasing it by degrees very slowly, but at the same time persisting in such attempts with great constancy.

MDCXXV. As these, though the only effectual measures, are often difficult to be admitted or carried into execution, some other means have been thought of and employed for reducing corpulency. These, if I mistake not, have all been certain methods of inducing a saline state in the mass of blood ; for such I suppose to be the effects of vinegar and of soap, which have been proposed. The latter, I believe, hardly passes into the blood vessels, without being resolved and formed into a neutral salt, with the acid which it meets with in the stomach. How well acrid and saline substances are fitted to diminish obesity, may appear from what has been said above in MDC-XV. What effects vinegar, soap, or other substances employed, have had in reducing corpulency, there have not proper opportunities of observing occurred to me : but I am well persuaded, that the inducing a saline and acrid state of the blood, may have worse consequences, than the corpulency it was intended to correct ; and that no person should hazard these, while he may have recourse to the more safe and certain means of abstinence and exercise.

C H A P. II.
OF FLATULENT SWELLINGS.

MDCXXVI. THE cellular texture of the human body very readily admits of air, and allows the same to pass from any one to every other part of it. Hence Emphysema have often appeared from air collected in the cellular texture under the skin, and in several other parts of the body. The flatulent swellings under the skin, have indeed most commonly appeared in consequence of air immediately introduced from without : but in some instances of flatulent swellings, especially, those of the internal parts not communicating with the alimentary canal, such an introduction cannot be perceived or supposed ; and therefore in these cases, some other cause of the production and collection of air must be looked for, though it is often not to be clearly ascertained.

In every solid, as well as every fluid substance which makes a part of the human body, there is a considerable quantity of air in a fixed state, which may be again restored to its elastic state, and separated from those substances, by the power of heat, putrefaction, and perhaps other causes : but which of these may have produced the several instances of pneumatisis and flatulent swellings that have been recorded by authors, I cannot pretend to ascertain. Indeed, upon account of these difficulties, I cannot proceed with any clearness on the general subject of pneumatisis* ; and, therefore, with regard to flatulent swellings, I find it necessary to confine myself to the consideration of those of the abdominal region alone ; which I shall now treat of under the general name of Tympanites†.

* Tense elastic swelling of the body, crackling from pressure. *Syn.* *Noſ.*

† A tense, elastic, and sonorous swelling of the abdomen ; constiveness ; emaciation of other parts.

Spec. 1. Tympanites (*intestinalis*), accompanied with a swelling of the abdomen, often unequal, and a frequent expulsion of air, alleviating the tension and pain.

MDCXXVII. The tympanites is a swelling of the abdomen ; in which the teguments appear to be much stretched by some distending power within, and equally stretched in every posture of the body. The swelling does not readily yield to any pressure ; and in so far as it does, very quickly recovers its former state upon the pressure being removed. Being struck, it gives a sound like a drum, or other stretched animal membranes. No fluctuation within is to be perceived ; and the whole feels less weighty than might be expected from its bulk. The uneasiness of the distension is commonly relieved by the discharge of air from the alimentary canal, either upwards or downwards.

MDCXXVIII. These are the characters by which the tympanites may be distinguished from the ascites or physconia ; and many experiments show, that the tympanites always depends upon a preternatural collection of air, somewhere within the teguments of the abdomen : but the seat of the air is in different cases somewhat different ; and this produces the different species of the disease.

One species is, when the air collected, is entirely confined within the cavity of the alimentary canal, and chiefly in that of the intestines. This species, therefore, is named the *Tympanites intestinalis*, Sauv. sp. 1. It is, of all others, the most common : and to it especially belong the characters given above.

A second species is, when the air collected, is not entirely confined to the cavity of the intestines, but is also present between their coats ; and such is that which is named by Sauvages *Tympanites enterophysodes*, Sauv. sp. 3. This has certainly been a rare occurrence ; and has probably occurred only in consequence of the *tympanites intestinalis*, by the air escaping from the cavity of the intestines into the interstices of the coats. It is, however, possible, that an erosion of the internal coat of the intestines may give occasion to the air, so constantly present in their cavity, to escape into the interstices of their

Spec. 2. *Tympanites (abdominalis)*, attended with a more distinct sound, and a more equal swelling ; the air is less frequently expelled, and gives less relief. *Syn. Nof.*

coats, though in the whole of their cavity there has been no previous accumulation.

A third species is, when the air is collected in the sac of the peritonæum, or what is commonly called the cavity of the abdomen, that is, the space between the peritonæum and viscera ; and then the disease is named *Tympanites abdominalis*, Sauv. sp. 2. The existence of such a tympanites without any *tympanites intestinalis*, has been disputed ; and it certainly has been a rare occurrence : but from several dissections, it is unquestionable that such a disease has sometimes truly occurred.

A fourth species of tympanites is, when the *tympanites intestinalis*, and *abdominalis*, are joined together, or take place at the same time. With respect to this, it is probable that the *tympanites intestinalis*, is the primary disease ; and the other only a consequence of the air escaping, by an erosion or rupture of the coats of the intestines, from the cavity of these, into that of the abdomen. It is indeed possible, that in consequence of erosion or rupture, the air which is so constantly present in the intestinal canal, may escape from thence in such quantity into the cavity of the abdomen, as to give a *tympanites abdominalis*, whilst there was no previous considerable accumulation of air in the intestinal cavity itself ; but I have not facts to ascertain this matter properly.

A fifth species has also been enumerated. It is when a *tympanites abdominalis*, happens to be joined with the *hydrops ascites* ; and such a disease therefore is named by Sauvages *Tympanites asciticus*, Sauv. sp. 4. In most cases of tympanites, indeed, some quantity of serum has, upon dissection, been found in the sac of the peritonæum ; but that is not enough to constitute the species now mentioned ; and when the collection of serum is more considerable, it is commonly where, both from the causes which have preceded, and likewise from the symptoms which attend, the ascites may be considered as the primary disease ; and therefore that this combination does not exhibit a proper species of the tympanites.

MDCXXIX. As this last is not a proper species, and as some of the others are not only extremely rare, but even, when occurring, are neither primary, nor to be easily distinguished, nor, as considered in themselves, admitting of any cure, I shall here take no further notice of them ; confining myself, in what follows, to the consideration of the most frequent case, and almost the only object of practice, the *tympanites intestinalis*.

MDCXXX. With respect to this, I cannot perceive that it arises in any peculiar temperament, or depends upon any predisposition, which can be discerned. It occurs in either sex, at every age, and frequently in young persons.

MDCXXXI. Various remote causes of it have been assigned : but many of these have not commonly the effect of producing this disease ; and although some of them have been truly antecedents of it, I can in few instances discover the manner in which they produce the disease, and therefore cannot certainly ascertain them to have been causes of it.

MDCXXXII. The phenomena of this disease in its several stages are the following.

The tumor of the belly sometimes grows very quickly to a considerable degree, and seldom in the slow manner the ascites commonly comes on. In some cases, however, the tympanites comes on gradually, and is introduced by an unusual flatulency of the stomach and intestines, with frequent borborygmi, and an uncommonly frequent expulsion of air upwards and downwards. This state is also frequently attended with colic pains, especially felt about the navel, and upon the sides towards the back ; but generally as the disease advances, these pains become less considerable. As the disease advances, there is a pretty constant desire to discharge air, but it is accomplished with difficulty ; and when obtained, although it give some relief from the sense of distension, this relief is commonly transient and of short duration. While the disease is coming on, some inequality of tumor and tension may be perceived, in different parts of the belly ; but the distension soon becomes equal over

the whole, and exhibits the phenomena mentioned in the character. Upon the first coming on of the disease, as well as during its progress, the belly is bound, and the fæces discharged are commonly hard and dry. The urine, at the beginning, is usually very little changed in quantity or quality from its natural state ; but as the disease continues, it is commonly changed in both respects, and at length sometimes a strangury, and even an ischuria, comes on. The disease has seldom advanced far before the appetite is much impaired, and digestion ill performed ; and the whole body, except the belly, becomes considerably emaciated. Together with these symptoms, a thirst and uneasy sense of heat at length come on, and a considerable frequency of pulse occurs, which continues throughout the course of the disease. When the tumor of the belly arises to a considerable bulk, the breathing becomes very difficult, with a frequent dry cough. With all these symptoms the strength of the patient declines ; and the febrile symptoms daily increasing, death at length ensues, sometimes probably in consequence of a gangrene coming upon the intestines.

MDCXXXIII. The tympanites is common only of some duration, and to be reckoned a chronic disease. It is very seldom quickly fatal, except where such an affection suddenly arises in fevers. To this Sauvages has properly given a different appellation, that of *Meteorismus* ; and I judge it may always be considered as a symptomatic affection, entirely distinct from the tympanites we are now considering.

MDCXXXIV. The tympanites is generally a fatal disease, seldom admitting of cure ; but what may be attempted in this way, I shall try to point out, after I shall have endeavored to explain the proximate cause, which alone can lay the foundation of what may be rationally attempted towards its cure.

MDCXXXV. To ascertain the proximate cause of tympanities, is somewhat difficult. It has been supposed in many cases, to be merely an uncommon quantity of air present in the alimentary canal, owing to the extrication and detachment of a greater quantity of air than usual,

from the alimentary matters taken in. Our vegetable aliments, I believe, always undergo some degree of fermentation ; and in consequence, a quantity of air is extricated and detached from them in the stomach and intestines : but it appears, that the mixture of the animal fluids which our aliments meet with in the alimentary canal, prevents the same quantity of air from being detached from them that would have been in their fermentation without such mixture, and it is probable that the same mixture contributes also to the reabsorption of the air that had been before in some measure detached. The extrication, therefore, of an unusual quantity of air from the aliments, may, in certain circumstances, be such, perhaps, as to produce a tympanites ; so that this disease may depend upon a fault of the digestive fluids, whereby they are unfit to prevent the too copious extrication of air, and unfit also to occasion that reabsorption of air which in sound persons commonly happen. An unusual quantity of air in the alimentary canal, whether owing to the nature of the aliments taken in, or to the fault of the digestive fluid, does certainly sometimes take place ; and may possibly have, and in some measure certainly has, a share in producing certain flatulent disorders of the alimentary canal ; but cannot be supposed to produce the tympanites, which often occurs when no previous disorder had appeared in the system. Even in those cases of tympanites which are attended at their beginning with flatulent disorders in the whole of the alimentary canal, as we know that a firm tone of the intestines both moderates the extrication of air, and contributes to its reabsorption or ready expulsion, so the flatulent symptoms which happen to appear at the coming on of a tympanites, are, in my opinion, to be referred to a loss of tone in the muscular fibres of the intestines, rather than to any fault in the digestive fluids.

MDCXXXVI. These, and other considerations, lead me to conclude, that the chief part of the proximate cause of tympanites, is a loss of tone in the muscular fibres of the intestines. But further, as air of any kind accumulated in the cavity of the intestines should, even by its

own elasticity, find its way either upwards or downwards, and should also, by the assistance of inspiration, be entirely thrown out of the body ; so, when neither the reabsorption nor the expulsion takes place, and the air is accumulated so as to produce tympanites, it is probable that the passage of the air along the course of the intestines is in some places of these interrupted. This interruption, however, can hardly be supposed to proceed from any other cause than spasmodic constrictions in certain parts of the canal ; and I conclude, therefore, that such constrictions concur as part in the proximate cause of tympanites. Whether these spasmodic constrictions are to be attributed to the remote cause of the disease, or may be considered as the consequence of some degree of atony first arising, I cannot with certainty, and do not find it necessary to determine.

MDCXXXVII. Having thus endeavored to ascertain the proximate cause of tympanites, I proceed to treat of its cure ; which indeed has seldom succeeded, and almost never but in a recent disease. I must, however, endeavor to say what may be reasonably attempted ; what has commonly been attempted ; and what attempts have sometimes succeeded in the cure of this disease.

MDCXXXVIII. It must be a first indication to evacuate the air accumulated in the intestines ; and for this purpose it is necessary that those constrictions, which had especially occasioned its accumulation, and continue to interrupt its passage along the course of the intestines, should be removed. As these, however, can hardly be removed but by exciting the peristaltic motion in the adjoining portions of the intestines, purgatives have been commonly employed ; but it is at the same time agreed, that the more gentle laxatives only ought to be employed, as the more drastic, in the overstretched and tense state of the intestines, are in danger of bringing on inflammation.

It is for this reason, also that glysters have been frequently employed ; and they are the more necessary, as the faeces collected are generally found to be in a hard and dry state. Not only upon account of this state of

the fæces, but, farther, when glysters produce a considerable evacuation of air, and thus show that they have some effect in relaxing the spasms of the intestines, they ought to be repeated very frequently.

MDCXXXIX. In order to take off the constrictions of the intestines, and with some view also to the carminative effects of the medicines, various antispasmodics have been proposed, and commonly employed ; but their effects are seldom considerable, and it is alleged that their heating and inflammatory powers have sometimes been hurtful. It is, however, always proper to join some of the milder kinds with both the purgatives and glysters that are employed ; and it has been very properly advised to give always the chief of antispasmodics, that is, an opiate, after the operation of purgatives is finished.

MDCXL. In consideration of the overstretched, tense, and dry state of the intestines, and especially of the spasmodic constrictions that prevail, fomentations and warm bathing have been proposed as a remedy ; and are said to have been employed with advantage : but it has been remarked that very warm baths have not been found so useful as tepid baths long continued.

MDCXLI. Upon the supposition that this disease depends especially upon an atony of the alimentary canal, tonic remedies seem to be properly indicated. Accordingly chalybeates, and various bitters, have been employed ; and, if any tonic, the Peruvian bark might probably be useful.

MDCXLII. But as no tonic remedy is more powerful than cold applied to the surface of the body, and cold drink thrown into the stomach ; so such a remedy has been thought of in this disease. Cold drink has been constantly prescribed, and cold bathing has been employed with advantage ; and there have been several instances of the disease being suddenly and entirely cured by the repeated application of snow to the lower belly.

MDCXLIII. It is hardly necessary to remark, that, in the diet of tympanitic persons, all sorts of food ready to become flatulent in the stomach are to be avoided ; and

it is probable, that the fossil acids and neutral salts, as antizymics, may be useful.

MDCXLIV. In obstinate and desperate cases of tympanites, the operation of the paracentesis has been proposed: but it is a very doubtful remedy, and there is hardly any testimony of its having been practised with success. It must be obvious, that this operation is a remedy suited especially, and almost only, to the *tympanites abdominalis*; the existence of which, separately from the *intestinalis*, is very doubtful, at least not easily ascertained. Even if its existence could be ascertained, yet it is not very likely to be cured by this remedy: and how far the operation might be safe in the *tympanites intestinalis*, is not yet determined by any proper experience.

C H A P. III.

OF WATERY SWELLINGS, OR DROPSIES.

MDCXLV. A PRETERNATURAL collection of serous or watery fluids, is often formed in different parts of the human body; and although the disease thence arising be distinguished according to the different parts which it occupies, yet the whole of such collections come under the general appellation of Dropsies. At the same time, although the particular instances of such collection are to be distinguished from each other according to the parts they occupy, as well as by other circumstances attending them; yet all of them seem to depend upon some general causes, very much in common to the whole. Before proceeding, therefore, to consider the several species, it may be proper to endeavor to assign the general causes of dropsy.

MDCXLVI. In persons in health, a serous or watery fluid seems to be constantly poured out, or exhaled in vapor, into every cavity and interstice of the human body capable of receiving it; and the same fluid, without remaining long or being accumulated in these spaces,

seems constantly to be soon again absorbed from thence by vessels adapted to the purpose. From this view of the animal economy, it will be obvious, that if the quantity poured out into any space, happens to be greater than the absorbents can at the same time take up, an unusual accumulation of serous fluid will be made in such parts ; or though the quantity poured out, be not more than usual, yet if the absorption be any ways interrupted or diminished, from this cause also an unusual collection of fluids may be occasioned.

Thus, in'general, dropsy may be imputed to an increased effusion, or to a diminished absorption ; and I therefore proceed to inquire into the several causes of these.

MDCXLVII. An increased effusion may happen, either from a preternatural increase of the ordinary exhalation, or from the rupture of vessels carrying, or of sacs containing serous or watery fluids.

MDCXLVIII. The ordinary exhalation may be increased by various causes, and particularly by an interruption given to the free return of the venous blood from the extreme vessels of the body to the right ventricle of the heart. This interruption seems to operate by resisting the free passage of the blood from the arteries into the veins, thereby increasing the force of the arterial fluids in the exhalants, and consequently the quantity of fluid which they pour out.

MDCXLIX. The interruption of the free return of the venous blood from the extreme vessels, may be owing to certain circumstances affecting the course of the venous blood ; very frequently, to certain conditions in the right ventricle of the heart itself, preventing it from receiving the usual quantity of blood from the vena cava ; or to obstructions in the vessels of the lungs preventing the entire evacuation of the right ventricle, and thereby hindering its receiving the usual quantity of blood from the cava. Thus, a polypus in the right ventricle of the heart, and the ossification of its valves, as well as all considerable and permanent obstructions of the lungs, have been found to be causes of dropsy.

MDCL. It may serve as an illustration of the operation of these general causes, to remark, that the return of the venous blood is in some measure resisted when the posture of the body is such as gives occasion to the gravity of the blood to oppose the motion of it in the veins, which takes effect when the force of the circulation is weak ; and from whence it is that an upright posture of the body produces or increases serous swellings in the lower extremities.

MDCLI. Not only those causes interrupting the motion of the venous blood more generally, but, farther, the interruption of it in particular veins, may likewise have the effect of increasing exhalation, and producing dropfy. The most remarkable instance of this is when considerable obstructions of the liver prevent the blood from flowing freely into it from the vena portarum and its numerous branches ; and hence these obstructions are a frequent cause of dropfy.

MDCLII. Scirrhosities of the spleen and other viscera, as well as the scirrhosity of the liver, have been considered as causes of dropfy ; but the manner in which they can produce the disease, I do not perceive, except it may be, where they happen to be near some considerable vein, by the compression of which they may occasion some degree of ascites ; or, by compressing the vena cava, may produce an anasarca of the lower extremities. It is indeed true, that scirrhosities of the spleen and other viscera, have been frequently discovered in the bodies of hydropic persons : but I believe they have been seldom found, unless when scirrhosities of the liver were also present ; and I am inclined to think, that the former have been the effects of the latter, rather than the cause of the dropfy : or that, if scirrhosities of the other viscera have appeared in hydropic bodies when that of the liver was not present, they must have been the effects of some of those causes of dropfy to be hereafter mentioned ; and consequently to be the accidental attendants, rather than the causes of such dropfies.

MDCLIII. Even in smaller portions of the venous system, the interruption of the motion of the blood in par-

ticular veins has had the same effect. Thus, a polypus formed in the cavity of a vein, or tumors formed in its coats, preventing the free passage of the blood through it, have had the effect of producing dropsy in parts towards the extremity of such veins.

MDCLIV. But the cause most frequently interrupting the motion of the blood through the veins, is the compression of tumors existing near to them; such as aneurisms in the arteries, abscesses, and scirrhouous or steatomatous tumors in the adjoining parts.

To this head may be referred, the compression of the descending cava by the bulk of the uterus in pregnant women, and the compression of the same by the bulk of water in the ascites; both of which compressions frequently produce serous swellings in the lower extremities.

MDCLV. It may be supposed, that a general preternatural plethora of the venous system may have the effect of increasing exhalation; and that this plethora may happen from the suppression of fluxes, or evacuations of blood, which had for some time taken place in the body, such as the menstrual and hemorrhoidal fluxes. A dropsey, however, from such a cause, has been at least a rare occurrence; and when it seems to have happened, I should suppose it owing to the same causes as the suppression itself, rather than to the plethora produced by it.

MDCLVI. One of the most frequent causes of an increased exhalation, I apprehend to be the laxity of the exhalant vessels. That such a cause may operate, appears probable from this, that paralytic limbs, in which such a laxity is to be suspected, are frequently affected with serous, or, as they are called, oedematous swellings.

But a much more remarkable and frequent example of its operation occurs in the case of a general debility of the system, which is so often attended with dropsy. That a general debility does induce dropsy, appears sufficiently from its being so commonly the consequence of powerfully debilitating causes; such as fevers, either of the continued or intermittent kind, which have lasted

long; long continued and somewhat excessive evacuations of any kinds; and in short, almost all diseases that have been of long continuance, and have at the same time induced the other symptoms of a general debility.

Among other causes inducing a general debility of the system, and thereby dropsy, there is one to be mentioned as frequently occurring, and that is, intemperance in the use of intoxicating liquors; from whence it is that drunkards of all kinds, and especially dram drinkers, are so affected with this disease.

MDCLVII. That a general debility may produce a laxity of the exhalants, will be readily allowed; and that by this especially it occasions dropsy, I judge from hence, that while most of the causes already mentioned are suited to produce dropsies of particular parts only, the state of general debility gives rise to an increased exhalation into every cavity and interstice of the body, and therefore brings on a general disease. Thus, we have seen effusions of a serous fluid made, at the same time, into the cavity of the cranium, into that of the thorax and of the abdomen, and likewise into the cellular texture almost over the whole of the body. In such cases, the operation of a general cause discovered itself, by these several dropsies increasing in one part as they diminished in another, and this alternately in the different parts. This combination, therefore, of the different species of dropsy, or rather, as it may be termed, this universal dropsy, must I think, be referred to a general cause; and in most instances, hardly any other can be thought of, but a general laxity of the exhalants. It is this, therefore, that I call the *hydropic diathesis*; which frequently operates by itself; and frequently, in some measure, concurring with other causes, is especially that which gives them their full effect.

This state of the system, in its first appearance, seems to be what has been considered as a particular disease under the name of *Cachexy*; but in every instance of it that has occurred to me, I have always considered, and have always found it, to be the beginning of general dropsy.

MDCLVIII. The several causes of dropsy already mentioned may produce the disease, although there be no preternatural abundance of serous or watery fluids in the blood vessels; but it is now to be remarked, that a preternatural abundance of that kind may often give occasion to the disease, and more especially when such abundance concurs with the causes above enumerated.

One cause of such preternatural abundance may be an unusual quantity of water taken into the body. Thus, an unusual quantity of water taken in by drinking, has sometimes occasioned a dropsy. Large quantities of water, it is true, are upon many occasions taken in; and being as readily thrown out again by stool, urine, or perspiration, have not produced any disease. But it is also certain, that, upon some occasions, an unusual quantity of watery liquors taken in, has run off by the several internal exhalants, and produced a dropsy. This seems to have happened, either from the excretaries not being fitted to throw out the fluid so fast as it had been taken in, or from the excretaries having been obstructed by accidentally concurring causes. Accordingly, it is said, that the sudden taking in of a large quantity of very cold water, has produced dropsy, probably from the cold producing a constriction of the excretaries.

The proportion of watery fluid in the blood may be increased, not only by the taking in a large quantity of water by drinking, as now mentioned, but it is possible that it may be increased also by water taken in from the atmosphere by the skin in an absorbing or imbibing state. It is well known, that the skin may be, at least occasionally, in such a state; and it is probable, that in many cases of beginning dropsy, when the circulation of the blood on the surface of the body is very languid, that the skin may be changed from a perspiring, to an imbibing state; and thus, at least, the disease may be very much increased.

MDCIX. A second cause of a preternatural abundance of watery fluids in the blood vessels, may be, an interruption of the ordinary watery excretions; and accordingly it is alleged, that persons much exposed to a cold

and moist air are liable to dropfy. It is also said, that an interruption, or considerable diminution, of the urinary secretion, has produced the disease ; and it is certain, that, in the case of an *ischuria renalis*, the serosity retained in the blood vessels has been poured out into some internal cavities, and has occasioned dropfy.

MDC LX. A third cause, of an over proportion of serous fluid in the blood ready to run off by the exhalants, has been very large evacuations of blood, either spontaneous or artificial. These evacuations, by abstracting a large proportion of red globules and gluten, which are the principal means of retaining serum in the red vessels, allow the serum to run off more readily by the exhalants : and hence dropfies have been frequently the consequence of such evacuations.

It is possible also, that large and long-continued issues, by abstracting a large proportion of gluten, may have the same effect.

An over proportion of the serous parts of the blood, may not only be owing to the *spoliation* just now mentioned, but many, I apprehend, be likewise owing to a fault in the digesting and assimilating powers in the stomach and other organs ; whereby they do not prepare and convert the aliments taken in, in such a manner as to produce from them the due proportion of red globules and gluten ; but, still continuing to supply the watery parts occasion these to be in an over proportion, and consequently ready to run off in too large quantity by the exhalants. It is in this manner that we explain the dropfy, so often, attending chlorosis ; which appears always at first by a pale color of the whole body, shewing a manifest deficiency of red blood ; which in that disease can only be attributed to an imperfect digestion and assimilation.

Whether a like imperfection take place in what has been called a *Cachexy*, I dare not determine. This disease indeed has been commonly and very evidently owing to the general causes of debility above mentioned : and it being probable that the general debility may effect the organs of digestion and assimilation ; so the imperfect state of these functions, occasioning a deficiency of red globules

and gluten, may often concur with the laxity of the exhalants in producing dropfy.

MDCXLVI. These are the several causes of increased exhalation, which I have mentioned as the chief cause of the effusion producing dropfy ; but I have likewise observed in MDCXLVII. that with the same effect, an effusion may also be made by the rupture of vessels carrying watery fluids.

In this way, a rupture of the thoracic duct, has given occasion to an effusion of chyle and lymph into the cavity of the thorax ; and a rupture of the lacteals, has occasioned a like effusion into the cavity of the abdomen ; and in either case, a dropfy has been produced.

It is sufficiently probable that a rupture of lymphatics, in consequence of strains, or the violent compression of neighboring muscles, has occasioned an effusion , which, being diffused in the cellular texture, has produced considerable dropfy.

It belongs to this head of causes, to remark, that there are many instances of a rupture or erosion of the kidneys, ureters, and bladder of urine ; whereby the urine has been poured into the cavity of the abdomen, and produced an ascites.

MDCLXII. Upon this subject, of the rupture of vessels carrying, or of vesicles containing watery fluids, I must observe, that the dissection of dead bodies has often shown vesicles formed upon the surface of many of the internal parts ; and it has been supposed, that the rupture or such vesicles, commonly named *Hydatides*, together with their continuing to pour out a watery fluid, has been frequently the cause of dropfy. I cannot deny the possibility of such a cause, but suspect the matter must be explained in a different manner.

There have been frequently found, in almost every different part of animal bodies, collections of spherical vesicles, containing a watery fluid ; and in many cases of supposed dropfy, particularly in those called the preternatural encysted dropfies, the swelling has been entirely owing to a collection of such hydatides. Many conjectures have been formed with regard to the nature and

production of these vesicles ; but the matter at last seems to be ascertained. It seems to be certain, that each of these vesicles has within it, or annexed to it, a living animal of the worm kind ; which seems to have the power of forming a vesicle for the purpose of its own economy, and of filling it with a watery fluid draw from the neighboring parts : and this animal has therefore been properly named by late naturalists, the *Tænia hydatigena*. The origin and economy of this animal, or an account of the several parts of the human body which it occupies, I cannot prosecute further here ; but it was proper for me, in delivering the causes of dropsy, to say thus much of hydatides : and I must conclude with observing, I am well persuaded, that most of the instances of preternatural encysted dropsies which have appeared in many different parts of the human body, have been truly collections of such hydatides ; but how the swellings occasioned by these are to be distinguished from other species of dropsy, or how they are to be treated in practice, I cannot at present determine.

MDCLXIII. After having mentioned these, I return to consider the other general cause of dropsy, which I have laid in MDCLXVI. may be an interruption or diminution of the absorption that should take up the exhaled fluids from the several cavities and interstices of the body ; the causes of which interruption, however, are not easily ascertained.

MDCLXIV. It seems probable that absorption may be diminished, and even cease altogether, from a loss of tone in the absorbent extremities of the lymphatics. I cannot indeed doubt that a certain degree of tone or active power is necessary in these absorbent extremities ; and it appears probable, that the same general debility which produces that laxity of the exhalant vessels, wherein I have supposed the hydroptic diathesis to consist, will at the same time occasion a loss of tone in the absorbents ; and therefore that a laxity of the exhalants will generally be accompanied with a loss of tone in the absorbents ; and that this will have a share in the production of dropsy. Indeed it is probable that the diminution of absorp-

tion has a considerable share in the matter ; as dropsies are often cured by medicines which seem to operate by exciting the action of the absorbents.

MDCLV. It has been supposed, that the absorption performed by the extremities of lymphatics may be interrupted by an obstruction of these vessels, or at least of the conglobate glands through which these vessels pass. This, however, is very doubtful. As the lymphatics have branches frequently communicating with one another, it is not probable that the obstruction of any one, or even several of these, can have any considerable effect in interrupting the absorption of their extremities.

And for the same reason, it is as little probable that the obstruction of conglobate glands can have such an effect : at least it is only an obstruction of the glands of the mesentery, through which so considerable a portion of the lymph passes, that can possibly have the effect of interrupting absorption. But even this we should not readily suppose, there being reason to believe that these glands, even in a considerably tumesced state, are not entirely obstructed : And accordingly I have known several instances of the most part of the mesenteric glands being considerably tumesced, without either interrupting the transmission of fluids to the blood vessels, or occasioning any dropsy.

An hydropic swelling, indeed, seems often to affect the arm from a tumor of the axillary gland : but it seems to me doubtful, whether the tumor of the arm may not be owing to some compression of the axillary vein, rather than to an obstruction of the lymphatics.

MDCLXVI. A particular interruption of absorption may be supposed to take place in the brain. As no lymphatic vessels have yet very certainly been discovered in that organ, it may be thought that the absorption, which certainly takes place there, is performed by the extremities of veins, or by vessels that carry the fluid directly into the veins ; so that any impediment to the free motion of the blood in the veins of the brain, may interrupt the absorption there and occasion that accumulation of serous fluid which so frequently occurs.

from a congestion of blood in these veins. But I give all this as a matter of conjecture only.

MDCLXVII. Having thus explained the general causes of dropfy, I should proceed, in the next place, to mention the several parts of the body in which serous collections take place, and so to mark the different species of dropfy : but I do not think it necessary for me to enter in any minute detail upon this subject. In many cases, these collections are not to be ascertained by any external symptoms, and therefore cannot be the objects of practice ; and many of them, though in some measure discernible, do not seem to be curable by our art. I the more especially avoid mentioning very particularly the several species, because that has already been sufficiently done by Dr. D. Monro,¹ and other writers, in every body's hands. I must confine myself here to the consideration of those species which are the most frequently occurring, and the most common objects of our practice ; which are, the Anasarca, Hydrothorax, and Ascites ; and of each of these I shall treat in so many separate sections.

SECT. I. Of *Anasarca**.

MDCLXVIII. The Anasarca is a swelling upon the surface of the body, at first commonly appearing in particular parts only, but at length frequently appearing over the whole. So far as it extends, it is an uniform swelling over the whole member, at first always soft, and readily receiving the pressure of the finger, which forms a hollow that remains for some little time after the pressure is removed, but at length rises again to its former fulness. This swelling generally appears, first, upon the lower extremities ; and there too only in the evening, disappearing again in the morning. It is usually more considerable as the person has been more in an erect posture during the day ; but there are may instances of the exercise of walking preventing altogether its otherwise usual coming on. Although this swelling appears at first

* A soft inelastic swelling of the whole body, or of particular parts.
Syn. Nef.

only upon the feet and about the ankles ; yet if the causes producing it continue to act, it gradually extends upwards, occupying the legs thighs, and trunk of the body, and sometimes even the head. Commonly the swelling of the lower extremities diminishes during the night ; and in the morning, the swelling of the face is most considerable, which again generally disappears almost entirely in the course of the day.

MDCLXIX. The terms of *Anasarca* and *Leucophlegmatia* have been commonly considered as synonymous ; but some authors have proposed to consider them as denoting distinct diseases. The authors who are of this last opinion employ the name of *Anasarca* for that disease which begins in the lower extremities, and is from thence gradually extended upwards in the manner I have just now described ; while they term *Leucophlegmatia*, that in which the same kind of swelling appears even at first very generally over the whole body. They seem to think also, that the two diseases proceed from different causes ; and that, while the *anasarca* may arise from the several causes in MDCLXVIII.—MDCLIX. the *leucophlegmatia* proceeds especially from a deficiency of red blood, as we have mentioned in MDCLX. *et seq.* I cannot, however, find any proper foundation for this distinction ; for although in dropsies proceeding from the causes mentioned in MDCLX. *et seq.* the disease appears in some cases more immediately affecting the whole body ; yet that does not establish a difference from the common case of *anasarca* : for the disease, in all its circumstances, comes at length to be entirely the same ; and in the cases occasioned by a deficiency of red blood, I have frequently observed it to come on exactly in the manner of an *anasarca*, as above described.

MDCLXX. An *anasarca* is evidently a preternatural collection of serous fluid in the cellular texture immediately under the skin. Sometimes pervading the skin itself, it oozes out through the pores of the cuticle ; and sometimes, too gross to pass by these, it raises the cuticle in blisters. Sometimes the skin, not allowing the water to pervade it, is compressed and hardened, and at the same

time so much distended, as to give anasarcaous tumors an unusual firmness. It is in these last circumstances also that an erythematic inflammation is ready to come upon anasarcaous swellings.

MDCLXXI. An anasarca may immediately arise from any of the several causes of dropfy which act more generally upon the system: and even when other species of dropfy, from particular circumstances, appear first, yet whenever these proceed from any causes more generally affecting the system, an anasarca sooner or later comes always to be joined with them.

MDCLXXII. The manner in which this disease commonly first appears, will be readily explained by what I have said in MDCL respecting the effects of the posture of the body. Its gradual progress, and its affecting, after some time, not only the cellular texture under the skin, but probably also much of the same texture in the internal parts, will be understood partly from the communication that is readily made between the several parts of the cellular texture; but especially from the same general causes of the disease producing their effects in every part of the body. It appears to me that the water of anasarcaous swellings is more readily communicated to the cavity of the thorax, and to the lungs, than to the cavity of the abdomen, or to the viscera contained in it.

MDCLXXIII. An anasarca is almost always attended with a scarcity of urine; and the urine voided, is from its scarcity, always of a high color, and from the same cause, after cooling, readily lets fall a copious reddish sediment. This scarcity of urine may sometimes be owing to an obstruction of the kidneys, but probably is generally occasioned by the watery parts of the blood running off into the cellular texture, and being thereby prevented from passing in the usual quantity to the kidneys.

The disease is also generally attended with an unusual degree of thirst; a circumstance I would attribute to a like abstraction of fluid from the tongue and fauces, which are extremely sensible to every diminution of the fluids in these parts.

MDCLXXIV. The cure of anasarca is to be attempted upon three general indications.

1. The removing the remote causes of the disease.
2. The evacuation of the serous fluid already collected in the cellular texture.
3. The restoring the tone of the system, the loss of which may be considered in many cases as the proximate cause of the disease.

MDCLXXV. The remote causes are very often such as had not only been applied, but had also been removed, long before the disease came on. Although, therefore, their effects remain, the causes themselves cannot be the objects of practice ; but if the causes still continue to be applied, such as intemperance, indolence, and some others, they must be removed. For the most part, the remote causes are certain diseases previous to the dropfy, which are to be cured by the remedies particularly adapted to them, and cannot be treated of here. The curing of these indeed may be often difficult ; but it was proper to lay down the present indication, in order to show, that when these remote causes cannot be removed, the cure of the dropfy must be difficult, or perhaps impossible. In many cases, therefore, the following indications will be to little purpose ; and particularly, that often the execution of the second will not only give the patient a great deal of fruitless trouble, but commonly also hurry on his fate.

MDCLXXVI. The second indication for evacuating the collected serum, may be sometimes executed with advantage, and often, at least, with temporary relief. It may be performed in two ways. First, by drawing off the water directly from the dropfical part, by openings made into it for that purpose : Or, secondly, by exciting certain serous excretions ; in consequence of which, an absorption may be excited in the dropfical parts, and thereby the serum absorbed and carried into the blood vessels, may afterwards be directed to run out or may spontaneously pass out, by one or other of the common excretions.

MDCLXXVII. In an anasarca, the openings into the dropical part are commonly to be made in some part of the lower extremities ; and will be most properly made by many small punctures reaching the cellular texture. Formerly, considerable incisions were employed for this purpose : but as any wound made in dropical parts, which, in order to their healing, must necessarily inflame and suppurate, are liable to become gangrenous ; so it is found to be much safer to make the openings by small punctures only, which may heal up by the first intention. At the same time, even with respect to these punctures, it is proper to observe, that they should be made at some distance from one another, and that care should be taken to avoid making them in the most depending parts.

MDCLXXVIII. The water of anasarcous limbs may sometimes be drawn off by pea issues, made by caustic a little below the knees : for as the great swelling of the lower extremities is chiefly occasioned by the serous fluid exhaled into the upper parts constantly falling down to the lower; so the issues now mentioned, by evacuating the water from these upper parts, may very much relieve the whole of the disease. Unless, however, the issues be put in before the disease is far advanced, and before the parts have very much lost their tone, the places of the issues are ready to become affected with gangrene.

Some practical writers have advised the employment of setons for the same purpose that I have proposed issues ; but I apprehend that setons will be more liable than issues to the accident just now mentioned.

MDCLXXIX. For the purpose of drawing out serum from anasarcous limbs, blisters have been applied to them, and sometimes with great success ; but the blistered parts are ready to have a gangrene come upon them. Blistering is therefore to be employed with great caution ; and perhaps only in the circumstances that I have mentioned above to be fit for the employment of issues.

MDCLXXX. Colewort leaves applied to the skin, readily occasion a watery exudation from its surface ; and applied to the feet and legs affected with anasarca, have

sometimes drawn off the water very copiously, and with great advantage.

Analogous, as I judge, to this, oiled silk hose put upon the feet and legs, so as to shut out all communication with the external air, have been found sometimes to draw a quantity of water from the pores of the skin, and are said in this way to have relieved anasarcaous swellings : but in several trials made, I have never found either the application of these hose, or that of the colewort leaves, of much service.

MDCLXXXI. The second means proposed in MDCLXXVI. for drawing off the water from dropical places, may be the employment of emetics, purgatives, diuretics, or sudorifics.

MDCLXXXII. As spontaneous vomiting has sometimes excited an absorption in hydroptic parts, and thereby drawn off the water lodged in them, it is reasonable to suppose, that vomiting excited by art may have the same effect ; and accordingly it has been often practised with advantage. The practice however requires that the strong antimonial emetics be employed, and that they be repeated frequently after short intervals.

MDCLXXXIII. Patients submit more readily to the use of purgatives, than to that of emetics ; and indeed they commonly bear the former more easily than the latter. At the same time, there are no means we can employ to procure a copious evacuation of serous fluids with greater certainty than the operation of purgatives; and it is upon these accounts that purging is the evacuation which has been most frequently, and perhaps with most success, employed in dropsy. It has been generally found necessary to employ purgatives of the more drastic kind ; which are commonly known, and need not be enumerated here. I believe indeed, that the more drastic purgatives are the most effectual for exciting absorption, as their stimulus is most readily communicated to the other parts of the system ; but of late, an opinion has prevailed, that some milder purgatives may be employed with advantage. This opinion has prevailed particularly with regard to the crystals vulgarly called the Cream

of Tartar, which in large doses frequently repeated, have sometimes answered the purpose of exciting large evacuations, both by stool and urine; and has thereby cured dropsies. This medicine, however, has frequently failed, both in its operation and effects, when the drastic purgatives have been more successful.

Practitioners have long ago observed, that in the employment of purgatives, it is requisite they be repeated after as short intervals as the patient can bear; probably for this reason, that when the purging is not carried to the degree of soon exciting an absorption, the evacuation weakens the system, and thereby increases the afflux of fluids to the hydroptic parts.

MDCLXXXIV. The kidneys afford a natural outlet for a great part of the watery fluids contained in the blood vessels; and the increasing the excretion by the kidneys to a considerable degree, is a means as likely as any other of exciting an absorption in dropsical parts. It is upon this account that diuretic medicines have been always properly employed in the cure of dropsey. The various diuretics that may be employed, are enumerated in every treatise of the *Materia Medica* and of the *Practice of Physic*, and therefore need not be repeated here. It happens, however, unluckily, that none of them are of very certain operation; neither is it well known why they sometimes succeed, and why they so often fail; nor why one medicine should prove of service when another does not. It has been generally the fault of writers upon the *Practice of Physic*, that they give us instances of cases in which certain medicines have proved very efficacious, but neglect to tell us in how many other instances the same have failed.

MDCLXXXV. It deserves to be particularly observed here, that there is hardly any diuretic more certainly powerful than a large quantity of common water taken in by drinking. I have indeed observed above, in MDCLXVIII. that a large quantity of water, or of watery liquors, taken in by drinking, has sometimes proved a cause of dropsey; and practitioners have been formerly so much afraid, that watery liquors taken in by drinking, might

run off into dropfical places and increase the disease, that they have generally enjoined the abstaining as much as possible from such liquors. Nay, it has been further asserted, that by avoiding this supply of exhalation, and by a total abstinence from drink, dropsies have been entirely cured. What conclusion is to be drawn from these facts is, however, very doubtful. A dropfy arising from a large quantity of liquids taken into the body, has been a very rare occurrence ; and there are, on the other hand, innumerable instances of very large quantities of water having been taken in and running off again very quickly by stool and urine, without producing any degree of dropfy. With respect to the total abstinence from drink, it is a practice of the most difficult execution ; and therefore has been so seldom practised, that we cannot possibly know how far it might prove effectual. The practice of giving drink very sparingly, has indeed been often employed ; but in a hundred instances, I have seen it carried to a great length without any manifest advantage ; while, on the contrary, the practice of giving drink very largely has been found not only safe, but very often effectual in curing the disease. The ingenious and learned Dr. Millman has, in my opinion, been commendably employed in restoring the practice of giving large quantities of watery liquors for the cure of dropfy. Not only from the instances he mentions from his own practice, and from that of several eminent physicians in other parts of Europe, but also from many instances in the records of physic, of the good effects of drinking large quantities of mineral waters in the cure of dropfy, I can have no doubt of the practice recommended by Dr. Millman being very often extremely proper. I apprehend it to be especially adapted to those cases in which the cure is chiefly attempted by diuretics. It is very probable, that these medicines can hardly be carried in any quantity to the kidneys without being accompanied with a large portion of water ; and the late frequent employment of the crystals of tartar has often shown, that the diuretic effects of that medicine are almost only remarkable when accompanied with a large quantity of

water ; and that without this, the diuretic effects of the medicine seldom appear. I shall conclude this subject with observing, that as there are so many cases of dropsy absolutely incurable, the practice now under consideration may often fail, yet in most cases it may be safely tried ; and if it appear that the water taken in passes readily by the urinary secretion, and especially that it increases the urine beyond the quantity of drink taken in, the practice may probably be continued with great advantage : but on the contrary, if the urine be not increased, or be not even in proportion to the drink taken in, it may be concluded, that the water thrown in runs off by the exhalants, and will augment the disease.

MDCLXXXVI. Another set of remedies which may be employed for exciting a serous excretion, and thereby curing dropsy, is that of sudorifics. Such remedies indeed have been sometimes employed : but however useful they may have been thought, there are few accounts of their having effected a cure ; and although I have had some examples of their success, in most instances of their trial they have been ineffectual.

Upon this subject it is proper to take notice of the several means that have been proposed and employed for dissipating the humidity of the body ; and particularly that of heat externally applied to the surface of it. Of such applications I have had no experience ; and their propriety and utility must rest upon the credit of the authors who relate them. I shall offer only this conjecture upon the subject : That if such measures have been truly useful, as it has seldom been by the drawing out of any sensible humidity, it has probably been by their restoring the perspiration, which is so often greatly diminished in this disease ; or perhaps by changing the state of the skin, from the imbibing condition which is alleged to take place, into that of perspiring.

MDCLXXXVII. When, by the several means now mentioned, we shall have succeeded in evacuating the water of dropsties, there will then especially be occasion for our third indication : which is, to restore the tone of the system, the loss of which is so often the cause of the dis-

ease. This indication, indeed, may properly have place from the very first appearance of the disease; and certain measures adapted to this purpose may, upon such first appearance, be employed with advantage. In many cases of a moderate disease, I am persuaded that they may obviate any future increase of it.

MDCLXXXVIII. Thus, upon what is commonly the first symptom of anasarca, that is, upon the appearance of what are called Oedematous Swellings of the feet and legs, the three remedies of bandaging, friction, and exercise, have often been used with advantage.

MDCLXXXIX. That some degree of external compression, is suited to support the tone of the vessels, and particularly to prevent the effects of the weight of the blood in dilating those of the lower extremities, must be sufficiently evident; and the giving that compression by a bandage properly applied, has been often useful. In applying such a bandage, care is to be taken that the compression may never be greater on the upper than on the lower part of the limb; and this, I think, can hardly ever be so certainly avoided, as by employing a properly constructed laced stocking.

MDCXC. Friction is another means by which the action of the blood vessels may be promoted, and thereby the stagnation of fluids in their extremities prevented. Accordingly, the use of the flesh brush has often contributed to discuss oedematous swellings. It appears to me, that friction, for the purposes now mentioned, is more properly employed in the morning, when the swelling is very much gone off, than in the evening, when any considerable degree of it has already come on. I apprehend also, that friction being made from below upwards only, is more useful than when made alternately upwards and downwards. It has been common, instead of employing the flesh brush, to make the friction by warm and dry flannels; and this may in some cases be the most convenient: but I cannot perceive that the impregnation of these flannels with certain dry fumes is of any benefit.

MDCXCI. With respect to exercise, I must observe, that although persons being much in an erect posture during

the day, may seem to increase the swelling which comes on at night ; yet as the action of the muscles has a great share in promoting the motion of the venous blood, so I am certain, that as much exercise in walking as the patient can easily bear, will often prevent that oedematous swelling which much standing, and even sitting, would have brought on.

MDCXII. These measures, however, although they may be useful at the coming on of a dropsey, whose causes are not very powerful, will be often insufficient in a more violent disease ; and such therefore will require more powerful remedies. These are exercise and tonic medicines ; which may be employed both during the course of the disease, and especially after the water has been evacuated.

MDCXIII. Exercise is suited to assist in every function of the animal economy, particularly to promote perspiration, and thereby prevent the accumulation of watery fluids in the body. I apprehend also, that it may be the most effectual means for preventing the skin from being in an imbibing state ; and, as has been hinted above on the subject of Emaciation (MDCVII.), I am persuaded, that a full and large perspiration will always be a means of exciting absorption in every part of the system. Exercise, therefore, promises to be highly useful in dropsey ; and any mode of it may be employed that the patient can most conveniently admit of. It should, however, always be as much as he can easily bear : and in anaesthesia, the share which the exercise of muscles has in promoting the motion of the venous blood, induces me to think that bodily exercise, to whatever degree the patient can bear it, will always be the most useful. From some experience also, I am persuaded, that by exercise alone, employed early in the disease, many dropseys may be cured.

MDCXCV. Besides exercise, various tonic remedies are properly employed to restore the tone of the system. The chief of these are, chalybeates, the Peruvian bark, and various bitters. These are not only suited to restore the tone of the system in general, but are particu-

larly useful in strengthening the organs of digestion, which in dropsies are frequently very much weakened : and for the same purpose also aromatics may be frequently joined with the tonics.

MDCXCV. Cold bathing is upon many occasions the most powerful tonic we can employ ; but at the beginning of dropsy, when the debility of the system is considerable, it can hardly be attempted with safety. After, however, the water of dropsies has been very fully evacuated, and the indication is to strengthen the system for preventing a relapse, cold bathing may perhaps have a place. It is, at the same time, to be admitted with caution ; and can scarcely be employed till the system has otherwise recovered a good deal of vigor. When that indeed has happened, cold bathing may be very useful in confirming and completing it.

MDCXCVI. In persons recovering from dropsy, while the several means now mentioned for strengthening the system are employed, it will be proper at the same time to keep constantly in view the support of the watery excretions ; and consequently the keeping up the perspiration by a great deal of exercise, and continuing the full flow of the urinary excretion by the frequent use of diuretics.

SECT. II. *Of the Hydrothorax*, or Dropsy of the Breast.*

MDCXCVII. The preternatural collection of serous fluid in the thorax, to which we give the appellation of *Hydrothorax*, occurs more frequently than has been imagined. Its presence, however, is not always to be very certainly known ; and it often takes place to a considerable degree before it be discovered.

MDCXCVIII. These collections of watery fluids in the thorax, are found in different situations. Very often the water is found at the same time in both sacs of the pleura, but frequently in one of them only. Sometimes it is found in the pericardium alone ; but for the most part

* Dyspnoea ; paleness of the face ; œdematous swellings of the feet ; scanty urine ; difficulty in lying in bed ; sudden and spontaneous starting from sleep, with palpitation ; water fluctuating in the breast. *Syn.* Nœ.

it only appears there when at the same time a collection is present in one or both cavities of the thorax. In some instances, the collection is found to be only in that cellular texture of the lungs which surrounds the bronchiæ, without there being at the same time any effusion into the cavity of the thorax.

Pretty frequently the water collected consists chiefly of a great number of hydatides in different situations; sometimes seemingly floating in the cavity, but frequently connected with and attached to the particular parts of the internal surface of the pleura.

M D C C. From the collection of water being thus in various situations and circumstances, symptoms arise which are different in different cases; and from thence it becomes often difficult to ascertain the presence and nature of the affection. I shall, however, endeavor here to point out the most common symptoms, and especially those of that principal and most frequent form of the disease, when the serous fluid is present in both sacs of the pleura, or, as we usually speak, in both cavities of the thorax.

M D C C I. The disease frequently comes on with a sense of anxiety about the lower part of the sternum. This, before it has subsisted long, comes to be joined with some difficulty of breathing; which at first appears only upon the person's moving a little faster than usual, upon his walking up an acclivity, or upon his ascending a stair case: but after some time, this difficulty of breathing becomes more constant and considerable, especially during the night, when the body is in a horizontal situation. Commonly, at the same time, lying upon one side is more easy than upon the other, or perhaps lying upon the back more easy than upon either side. These circumstances are usually attended with a frequent cough, that is at first dry; but which, after some time, is accompanied with an expectoration of thin mucus.

With all these symptoms, the hydrothorax is not certainly discovered, as the same symptoms often attend other diseases of the breast. When, however, along with these symptoms, there is at the same time an oedematous

swelling of the feet and legs, a leucophlegmatic paleness of the face, and a scarcity of urine, the existence of a hydrothorax can be no longer doubtful. Some writers have told us that sometimes in this disease, before the swelling of the feet comes on, a watery swelling of the scrotum appears ; but I have never met with any instance of this.

MDCCLII. Whilst the presence of the disease is somewhat uncertain, there is a symptom which sometimes takes place, and has been thought to be a certain characteristic of it ; and that is, when, soon after the patient has fallen asleep, he is suddenly awaked with a sense of anxiety and difficult breathing, and with a violent palpitation of the heart. These feelings immediately require an erect posture ; and very often the difficulty of breathing continues to require and to prevent sleep for a great part of the night. This symptom I have frequently found attending the disease ; but I have also met with several instances in which this symptom did not appear. I must remark further, that I have not found this symptom attending the empyema, or any other disease of the thorax ; and therefore, when it attends a difficulty of breathing, accompanied with any the smallest symptom of dropsy, I have had no doubt in concluding the presence of water in the chest, and have always had my judgment confirmed by the symptoms which afterwards appeared.

MDCCLII. The hydrothorax often occurs with very few, or almost none, of the symptoms above mentioned ; and is not, therefore, very certainly discovered till some others appear. The most decisive symptom is a fluctuation of water in the chest, perceived by the patient himself, or by the physician, upon certain motions of the body. How far the method proposed by Auenbrugger will apply to ascertain the presence of water and the quantity of it in the chest, I have not had occasion or opportunity to observe.

It has been said, that in this disease some tumor appears upon the sides or upon the back ; but I have not met with any instance of this. In one instance of the disease,

I found one side of the thorax considerably enlarged, the ribs standing out farther on that side than upon the other.

A numbness and a degree of palsy in one or both arms, has been frequently observed to attend a hydrothorax.

Soon after this disease has made some progress, the pulse commonly becomes irregular, and frequently intermitting: but this happens in so many other diseases of the breast, that unless when it is attended with some other of the above mentioned symptoms, it cannot be considered as denoting the hydrothorax.

MDCCIII. This disease, as other dropsy, is commonly attended with thirst and a scarcity of urine, to be explained in the same manner as in the case of anasarca (MDCLXXIII.) The hydrothorax, however, is sometimes without thirst, or any other febrile symptom; although I believe this happens in the case of partial affections only, or when a more general affection is yet but in a slight degree. In both cases, however, and more especially when the disease is considerably advanced, some degree of fever is generally present: and I apprehend it to be in such case, that the persons affected are more than usually sensible to cold, and complain of the coldness of the air when that is not perceived by other persons.

MDCCIV. The hydrothorax sometimes appears alone, without any other species of dropsy being present at the same time: and in this case the disease, for the most part, is a partial affection, as being either of one side of the thorax only, or being a collection of hydatides in one part of the chest. The hydrothorax, however, is very often a part of more universal dropsy, and when at the same time there is water in all the three principal cavities, and in the cellular texture of a great part of the body. I have met with several instances, in which such universal dropsy began first by an effusion into the thorax. The hydrothorax, however, more frequently comes on from an anasarca gradually increasing; and, as I have said above, the general diathesis seems often to affect the thorax sooner than it does either the head or the abdomen.

MDCCV. This disease seldom admits of a cure, or even of alleviation, from remedies. It commonly proceeds to give more and more difficulty of breathing, till, the action of the lungs be entirely interrupted by the quantity of water effused; and the fatal event frequently happens more suddenly than was expected. In many of the instances of a fatal hydrothorax, I have remarked a spitting of blood to come on several days before the patient died.

MDCCVI. The cause of hydrothorax is often manifestly one or other of the general causes of dropsy pointed out above: but what it is that determines these general causes to act more especially in the thorax, and particularly what it is that produces the partial collections that occur there, I do not find to be easily ascertained.

MDCCVII. From what has been said above, it will be evident, that the cure of hydrothorax must be very much the same with that of anasarca; and when the former is joined with the latter as an effect of the same general diathesis, there can be no doubt of the method of cure being the same in both. Even when the hydrothorax is alone, and the disease partial, from particular causes acting in the thorax only, there can hardly be any other measures employed, than the general ones proposed above. There is only one particular measure adapted to the hydrothorax; and that is, the drawing off the accumulated waters by a paracentesis of the thorax.

MDCCVIII. To what cases this operation may be most properly adapted, I find it difficult to determine. That it may be executed with safety, there is no doubt; and that it has been sometimes practised with success, seems to be very well vouched. When the disease depends upon a general hydropic diathesis, it cannot alone prove a cure, but may give a temporary relief; and when other remedies seem to be employed with advantage, the drawing off the water may very much favor a complete cure. I have not, however, been so fortunate as to see it practised with any success; and even where it was most promising, that is, in cases of partial affection, my expectations have been disappointed from it.

SECT. III. Of Ascites*, or Dropfy of the Lower Belly.

MDCIX. The name of *Ascites* is given to every collection of waters causing a general swelling and distension of the lower belly; and such collections are more frequent than those which happen in the thorax.

MDCX. The collections in the lower belly, like those of the thorax, are found in different situations. Most commonly they are in the sac of the peritonæum, or general cavity of the abdomen: but they often begin by sacs formed upon, and connected with, one or other of the viscera; and perhaps the most frequent instances of this kind occur in the ovaria of females. Sometimes the water of ascites is found entirely without the peritonæum, and between this and the abdominal muscles.

MDCXI. These collections connected with particular viscera, and those formed without the peritonæum, form that disease which authors have termed the *encysted dropfy* or *hydrops saccatus*. Their precise seat, and even their existence, is very often difficult to be ascertained. They are generally formed by collections of hydatides.

MDCXII. In the most ordinary case, that of abdominal dropfy, the swelling at first is in some measure over the whole belly, but generally appears most considerable in the epigastrium. As the disease, however, advances the swelling becomes more uniform over the whole. The distension, and sense of weight, though considerable, vary a little according as the posture of the body is changed; the weight being felt the most upon the side on which the patient lies, while at the same time on the opposite side the distension becomes somewhat less. In almost all the instances of ascites, the fluctuation of the water within, may be perceived by the practitioner's feeling, and sometimes by his hearing. This perception of fluctuation does not certainly distinguish the different states of

* A tense fluctuating swelling of the abdomen, little elastic.

Spec. 1. Ascites (*abdominalis*), with an equal swelling of the abdomen, and with an evident fluctuation.

Spec. 2. Ascites (*saccatus*), with a partial (at least in the beginning) swelling of the abdomen, and with a less evident fluctuation. *Syn. Nos.*

dropfy ; but serves very well to distinguish dropfy from tympanites, from cases of physconia, and from the state of pregnancy in women.

MDCXIII. An ascites frequently occurs when no other species of dropfy does at the same time appear ; but sometimes the ascites is a part only of universal dropfy. In this case, it usually comes on in consequence of an anasarca, gradually increasing ; but its being joined with anasarca, does not always denote any general diathesis, as for the most part an ascites sooner or later occasions œdematosus swellings of the lower extremities. When the collection of water in the abdomen, from whatever cause, becomes considerable, it is always attended with a difficulty of breathing : but this symptom occurs often when, at the same time, there is no water in the thorax. The ascites is sometimes unaccompanied with any fever ; but frequently there is more or less of fever present with it. The disease is never considerable, without being attended with thirst and a scarcity of urine.

MDCXIV. In the diagnosis of ascites, the greatest difficulty that occurs, is in discerning when the water is in the cavity of the abdomen, or when it is in the different states of encysted dropfy above mentioned. There is, perhaps, no certain means of ascertaining this in ail cases ; but in many we may attempt to form some judgment with regard to it.

When the antecedent circumstances give suspicion of a general hydropic diathesis ; when at the same time some degree of dropfy appears in other parts of the body ; and when, from its first appearance, the swelling has been equally over the whole belly, we may generally presume that the water is in the cavity of the abdomen. But when an ascites has not been preceded by any remarkably cachectic state of the system, and when at its beginning the tumor and tension had appeared in one part of the belly more than another, there is reason to suspect an encysted dropfy. Even when the tension and tumor of the belly have become general and uniform over the whole ; yet if the system of the body in general appear to be little affected ; if the patient's strength

be little impaired ; if the appetite continue, pretty entire, and the natural sleep be little interrupted ; if the menses in females continue to flow as usual ; if there be yet no anasarca ; or, though it may have already taken place, if it be still confined to the lower extremities, and there be no leucophlegmatic paleness or fallow color in the countenance ; if there be no fever, nor so much thirst, or scarcity of urine, as occur in a more general affection ; then, according as more of these different circumstances take place, there will be the stronger ground for supposing the ascites to be of the encysted kind.

The chief exception to be made from this as a general rule will in my opinion, be when the ascites may, with much probability, be presumed to have come on in consequence of a schirrous liver ; which, I apprehend, may occasion a collection of water in the cavity of the abdomen, while the general system of the body may not be otherwise much affected.

MDCCXV. With respect to the cure of ascites when of the encysted kind, it does not, so far as I know, admit of any. When the collection of water is in the abdominal cavity alone, without any other species of dropfy present at the same time, I apprehend the ascites will always be of difficult cure : for it may be presumed to depend upon a scirrhosity of the liver, or other considerable affection of the abdominal viscera, which I conceive to be of very difficult cure, and therefore the ascites depending upon them. At the same time, such cases may often admit of a temporary relief by the paracentesis.

MDCCXVI. When the ascites is a part of universal dropfy, it may, as far as other cases of that kind can, admit of a cure ; and it will be obvious, that such a cure must be obtained by the same means as above proposed for the cure of general anasarca.

It frequently happens, that the ascites is attended with a diarrhoea ; and, in that case, does not admit of the use of purgatives so freely as cases of anasarca commonly do. It is therefore often to be treated by diuretics almost alone.

The diuretics that may be employed, are chiefly those above mentioned ; but in ascites, a peculiar one has been found out. It is a long continued gentle friction of the skin over the whole of the abdomen, by the fingers dipped in oil. This has sometimes been useful in exciting an increased flow of urine ; but in most of the trials of it which I have known made, it has failed in producing that effect.

MDCCXVII. The ascites admits of a particular means for immediately drawing off the collected waters ; and that is the well known operation of the paracentesis of the abdomen. In what circumstances of ascites this operation can most properly be proposed, it is difficult to determine ; but, so far as I can judge, it must be regulated by very much the same considerations as those above mentioned with regard to the paracentesis of the thorax.

The manner of performing the paracentesis of the abdomen, and the precautions to be taken with respect to it, are now so commonly known, and delivered in so many books, that it is altogether unnecessary for me to offer any directions upon that subject here ; especially after the full and judicious information and directions given by Mr. BELL, in the second volume of his *System of Surgery*.



C H A P. IV.

OF GENERAL SWELLINGS, ARISING FROM AN INCREASED BULK OF THE WHOLE SUBSTANCE OF PARTICULAR PARTS.

MDCCXVIII. UPON the subjects of this chapter, several nosological difficulties occur, and particularly with respect to admitting the *Physconia* into the order of General Swellings. At present, however, it is not necessary for me to discuss this point, as I am here to omit entirely the consideration of *Physconia* ; both because it can sel-

dom admit of any successful practice, and because I cannot deliver any thing useful either with regard to the pathology or practice in such a disease.

MDCCXIX. The only other genus of disease comprehended under the title of the present chapter, is the Rachitis ; and this as being both a proper example of the class of *Cachexy*, and of the order of *Intumescentia* or General Swellings, I shall offer some observations with regard to it.

Of Rachitis, or Rickets.*

MDCCXX. This disease has been supposed to have appeared only in modern times, and not above two hundred years ago. This opinion, notwithstanding it has been maintained by persons of the most respectable authority, appears to me, from many considerations, improbable ; but it is a point of too little consequence to detain my readers here. The only application of it which deserves any notice is that it has led to a notion of the disease having arisen from the lues venerea, which had certainly made its first appearance in Europe not very long before the date commonly assigned for the appearance of rachitis : But I shall hereafter show, that the supposed connection between the Siphylis and Rachitis is without foundation.

MDCCXXI. In delivering the history of the *Rickets*, I must, in the first place, observe, that with respect to the antecedents of the disease, every thing to be found in authors upon this subject, appears to me to rest upon a very uncertain foundation. In particular, with respect to the state of the parents whose offspring become affected with this disease, I have met with many instances of it in children from seemingly healthy parents ; and have met likewise with many instances of children who never became affected with it, although born of parents who, according to the common accounts, should have

* The head is large proportioned to the rest of the body, and projects forward ; the joints are swelled ; the ribs flattened ; the abdomen tumid, and the other parts emaciated. *Syn.* *Nos.*

produced a rickety offspring ; so that, even making allowance for the uncertainty of fathers, I do not find the general opinion of authors upon this subject to be properly supported.

MDCCXXII. The disease, however, may be justly considered as proceeding from parents ; for it often appears in a great number of the same family : And my observation leads me to judge, that it originates more frequently from mothers than from fathers. So far as I can refer the disease of the children to the state of the parents, it has appeared to me most commonly to arise from some weakness, and pretty frequently from a scrophulous habit in the mother. To conclude the subject, I must remark, that in many cases I have not been able to discern the condition of the parents, to which I could refer it.

When nurses, other than the mothers, have been employed to suckle children, it has been supposed that such nurses have frequently given occasion to the disease ; and when nurses have both produced and have suckled children who became rickety, there may be ground to suspect their having occasioned the disease in the children of other persons : But I have had few opportunities of ascertaining this matter. It has in some measure appeared to me, that those nurses are most likely to produce this disease, who give infants a large quantity of very watery milk, and who continue to suckle them longer than the usual time. Upon the whole, however, I am of opinion, that hired nurses seldom occasion this disease, unless when a predisposition to it has proceeded from the parents.

MDCCXXIII. With regard to the other antecedents, which have been usually enumerated by authors as the remote causes of this disease, I judge the accounts given to be extremely fallacious ; and I am very much persuaded, that the circumstances in the rearing of children, have less effect in producing rickets than has been imagined. It is indeed not unlikely, that some of these circumstances mentioned as remote causes may favor, while other circumstances may resist the coming on of the disease ; but at the same time, I doubt if any of the former would

produce it where there was no predisposition in the child's original constitution. This opinion of the remote causes, I have formed from observing, that the disease comes on when none of these had been applied ; and more frequently than many of them had been applied without occasioning the disease. Thus the learned ZEVIANI alleges, that the disease is produced by an acid from the milk with which a child is fed for the first nine months of its life : But almost all children are fed with the same food, and in which also an acid is always produced ; while at the same time, not one in a thousand of the infants so fed becomes affected with the rickets. If, therefore, in the infants who become affected with this disease, a peculiar noxious acid is produced, we must seek for some peculiar cause of its Production, either in the quality of the milk, or in the constitution of the child ; neither of which, however, Mr. Zeviani has explained. I cannot indeed believe that the ordinary acid of milk has any share in producing this disease, because I have known many instances of the acid being produced and occasioning various disorders, without however its ever producing rickets.

Another of the remote causes commonly assigned, is the child's being fed with unfermented farinaceous food. But over the whole world children are fed with such farinacea, while the disease of rickets is a rare occurrence : and I have known many instances where children have been fed with a greater than usual proportion of fermented farinacea, and also a greater proportion of animal food, without these preventing the disease. In my apprehension, the like observations might be made with respect to most of the circumstances that have been mentioned as the remote causes of rickets.

MDCCXXIV. Having thus offered my opinion concerning the supposed antecedents of this disease, I proceed now to mention the phenomena occurring after it has actually come on.

The disease seldom appears before the ninth month, and seldom begins after the second year of a child's age. In the interval between these periods, the appearance of

the disease is sometimes sooner, sometimes later ; and commonly at first the disease comes on slowly. The first appearances are a flaccidity of the flesh, the body at the same time becoming leaner, though food be taken in pretty largely. The head appears large with respect to the body ; with the fontanelle, and perhaps the sutures, more open than usual in children of the same age. The head continues to grow larger, in particular, the forehead becoming unusually prominent ; and at the same time the neck continues slender, or seems to be more so, in proportion to the head. The dentition is slow, or much later than usual ; and those teeth which come out, readily become black, and frequently again fall out. The ribs lose their convexity, and become flattened on the sides ; while the sternum is pushed outward, and forms a sort of ridge. At the same time, or perhaps sooner, the epiphyses at the several joints of the limbs become swelled ; while the limbs between the joints appear, or perhaps actually become more slender. The bones seem to be every where flexible, becoming variously distorted ; and particularly the spine of the back becoming incurvated in different parts of its length. If the child, at the time the disease comes on, had acquired the power of walking, it becomes daily more feeble in its motions, and more averse to the exertion of them, losing at length the power of walking altogether. Whilst these symptoms go on increasing, the abdomen is always full, and preternaturally tumid. The appetite is often good, but the stools are generally frequent and loose. Sometimes the faculties of the mind are impaired, and stupidity or fatuity prevails ; but commonly a premature sensibility appears, and they acquire the faculty of speech sooner than usual. At the first coming on of the disease, there is generally no fever attending it ; but it seldom continues long, till a frequent pulse, and other febrile symptoms, come to be constantly present. With these symptoms the disease proceeds, and continues in some instances for some years ; but very often, in the course of that time, the disease ceases to advance, and the health is entirely established, except that the distorted limbs produced during the dis-

ease continue for the rest of life. In other cases, however, the disease proceeds increasing till it has affected almost every function of the animal economy, and at length terminates in death. The variety of symptoms which in such cases appear, it does not seem necessary to enumerate, as they are not essential to the constitution of the disease, but are merely consequences of the more violent conditions of it. In the bodies of those who have died, various morbid affections have been discovered in the internal parts. Most of the viscera of the abdomen have been found to be preternaturally enlarged. The lungs have also been found in a morbid state, seemingly from some inflammation that had come on towards the end of the disease. The brain has been commonly found in a flacid state, with effusions of a serous fluid into its cavities. Very universally the bones have been found very soft, and so much softened as to be readily cut by a knife. The fluids have been always found in a dissolved state, and the muscular parts very soft and tender ; and the whole of the dead body without any degree of that rigidity which is so common in almost all others.

M^{DC}CXXV. From these circumstances of the disease, it seems to consist in a deficiency of that matter which should form the solid parts of the body. This especially appears in the faulty state of ossification, seemingly depending upon the deficiency of that matter which should be deposited in the membranes which are destined to become bony, and should give them their due firmness and bony hardness. It appears that this matter is not supplied in due quantity ; but that, in place of it, a matter fitted to increase their bulk, particularly in the epiphyses, is applied too largely. What this deficiency of matter depends upon, is difficult to be ascertained. It may be a fault in the organs of digestion and assimilation, which prevents the fluids in general from being properly prepared ; or it may be a fault in the organs of nutrition, which prevents the secretion of a proper matter to be applied. With respect to the latter, in what it may consist, I am entirely ignorant, and cannot even discern that such a condition exists : but the former cause, both

in its nature and existence, is more readily perceived; and it is probable that it has a considerable influence in the matter; as in rachitic persons a thinner state of the blood, both during life and after death, so commonly appears. It is this state of the fluids, or a deficiency of bony matter in them, that I consider as the proximate cause of the disease; and which again may in some measure depend upon a general laxity and debility of the moving fibres of the organs that perform the functions of digestion and assimilation.

MDCCXXVI. There is however something still wanting to explain why these circumstances discover themselves at a particular time of life, and hardly ever either before or after a certain period; and as to this I would offer the following conjectures: Nature having intended that human life should proceed in a certain manner, and that certain functions should be exercised at a certain period of life only; so it has generally provided, that at that period, and not sooner, the body should be fitted for the exercise of the functions suited to it. To apply this to our present subject, Nature seems to have intended that children should walk only at twelve months old; and accordingly has provided, that against that age, and no sooner, a matter should be prepared fit to give that firmness to the bones which is necessary to prevent their bending too easily under the weight of the body. Nature, however, is not always steady and exact in executing her own purposes; and if therefore the preparation of bony matter shall not have been made against the time there is particular occasion for it, the disease of rickets, that is, of soft and flexible bones, must come on; and will discover itself about the particular period we have mentioned. Further, it will be equally probable, that if at the period mentioned the bones shall have acquired their due firmness, and that nature goes on in preparing and supplying the proper bony matter, it may be presumed, that against the time a child is two years old, such a quantity of bony matter will be applied, as to prevent the bones from becoming again soft and flexible, during the rest of life; unless it happen, as indeed it sometimes does, that certain

causes occur to wash out again the bony matter from the membranes in which it had been deposited. The account I have now given of the period at which the rickets occur, seems to confirm the opinion of its proximate cause being a deficiency of bony matter in the fluids of the body.

MDCCXXVII. It has been frequently supposed, that a siphylitic taint has a share in producing rickets ; but such a supposition is altogether improbable. If our opinion of the rickets having existed in Europe before the siphylis was brought into it, be well founded, it will then, be certain that the disease may be occasioned without any siphylitic acrimony having a share in its production. But further, when a siphylitic acrimony is transmitted from the parent to the offspring, the symptoms do not appear at a particular time of life only, and commonly more early than the period of rickets ; the symptoms also are very different from those of rickets, and unaccompanied with any appearance of the latter ; and, lastly, the symptoms of siphylis are cured by means which, in the case of rickets, have either no effect, or a bad one. It may indeed possibly happen, that siphylis and rickets may appear in the same person ; but it is to be considered as an accidental complication : and the very few instances of it that have occurred, are by no means sufficient to establish any necessary connection between the two diseases.

MDCCXXVIII. With respect to the deficiency of bony matter, which I consider as the proximate cause of rickets, some further conjectures might be offered concerning its remote causes : but none of them appear to me very satisfactory ; and whatever they might be, it appears to me they must again be resolved into the supposition of a general laxity and debility of the system.

MDCCXXIX. It is upon this supposition almost alone that the cure of rickets has entirely proceeded. The remedies have been such especially as were suited to improve the tone of the system in general, or of the stomach in particular : and we know that the latter are not only suited to improve the tone of the stomach itself, but by that means to improve also the tone of the whole system.

MDCXXX. Of tonic remedies, one of the most promising seems to have been cold bathing ; and I have found it the most powerful in preventing the disease. For a long time past, it has been the practice in this country, with people of all ranks, to wash their children from the time of their birth with cold water ; and from the time that children are a month old, it has been the practice with people of better rank to have them dipped entirely in cold water every morning : and wherever this practice has been pursued, I have not met with any instance of rickets. Amongst our common people, although they wash their children with cold water only, yet they do not so commonly practise immersion : and when amongst these I meet with instances of rickets, I prescribe cold bathing ; which accordingly has often checked the progress of the disease, and sometimes seems to have cured it entirely.

MDCXXXI. The remedy of *Ens Veneris*, recommended by Mr. Boyle, and since his time very universally employed, is to be considered as entirely a tonic remedy. That or some other preparation of iron I have almost constantly employed, though not indeed always with success. I have been persuaded, that the *ens veneris* of Mr. Boyle, notwithstanding his giving it this appellation, was truly a preparation of iron, and no other than what we now name the *Flores Martiales* : but it appears, that both Benevoli and Buchner have employed a preparation of copper ; and I am ready to believe it to be a more powerful tonic than the preparations of iron.

MDCXXXII. Upon the supposition of tonic remedies being proper in this disease, I have endeavored to employ the Peruvian bark : but from the difficulty of administering it to infants in any useful quantity, I have not been able to discover its efficacy ; but I am very ready to believe the testimony of De Haen upon this subject.

MDCXXXIII. Exercise, which is one of the most powerful tonics, has been properly recommended for the cure of rickets ; and as the exercise of gestation only can be employed, it should always be with the child

laid in a horizontal situation, as the carrying them, or moving them in any degree of an erect posture, is very apt to occasion some distortion. It is extremely probable, that, in this disease, friction with dry flannels may be found an useful remedy.

MDCCXXXIV. It is also sufficiently probable, that the avoiding of moisture is not only adviseable, but may likewise be of service in the cure of this disease.

There is no doubt that a certain diet may contribute to the same end; but what may be the most eligible, I dare not determine. I have no doubt that leavened bread may be more proper than unfermented farinacea; but I cannot find any reason to believe that strong beer can ever be a proper remedy.

Practitioners have been divided in opinion concerning the use of milk in this disease. Zeviani, perhaps from theory, condemns the use of it; but Benevoli employed it without its impeding the cure of the disease. This last I have often remarked in the course of my own practice. As it is difficult to feed children entirely without milk; so I have commonly admitted it as a part of the diet of rickety children; and in many instances I can affirm, that it did not prevent the cure of the disease. In cases, however, of any appearance of rickets, and particularly of a slow dentition, I have dissuaded the continuance of a child upon the breast; because the milk of women is a more watery nourishment than that of cows: and I have especially dissuaded the continuing a child upon the breast, when I thought the nurse gave rather too much of such a watery nourishment; for, as has been above mentioned, I have had frequent occasion to suspect, that the milk of such nurses has a tendency to favor the coming on of rickets.

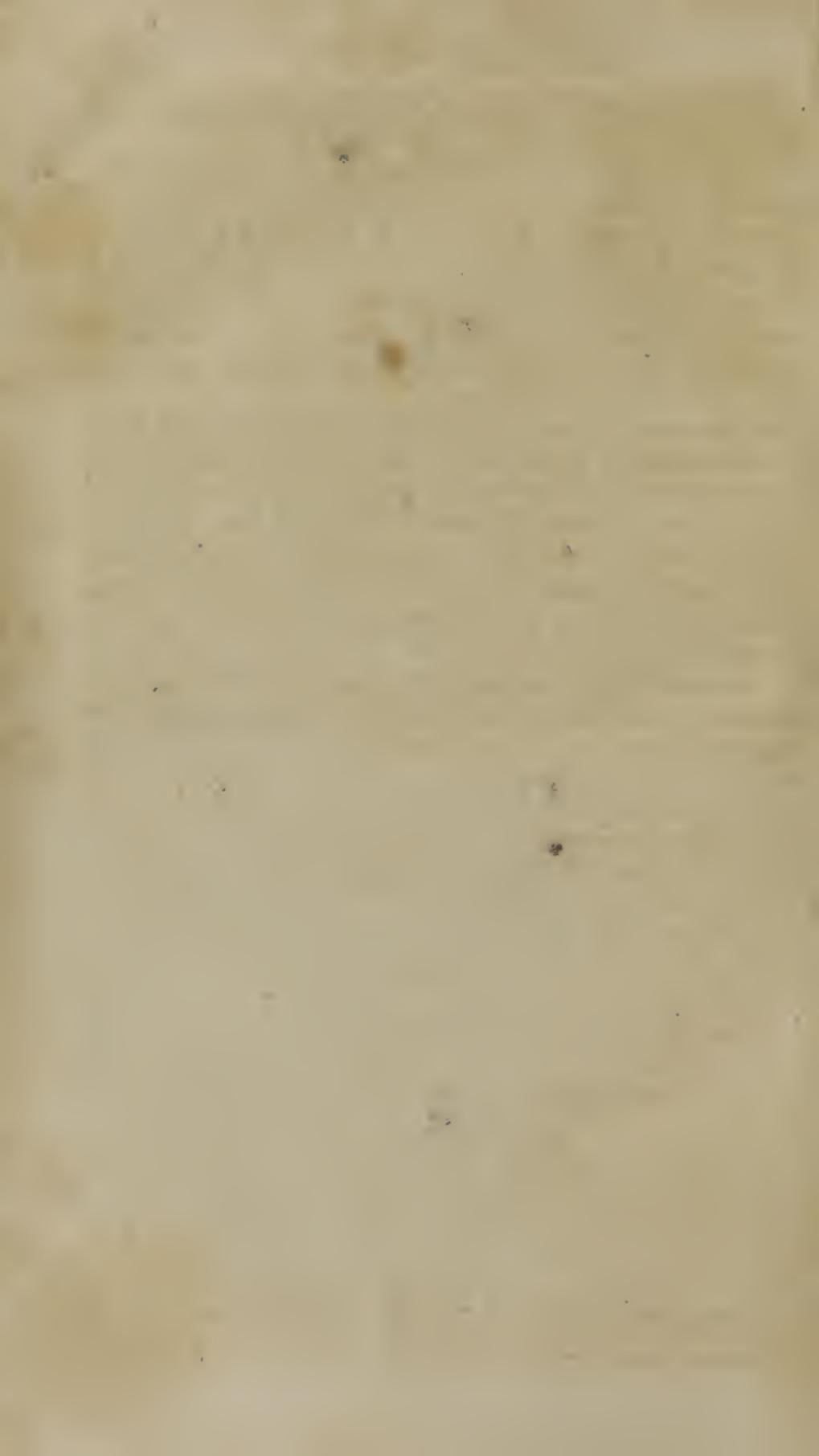
MDCCXXXV. Besides the remedies and regimen now mentioned, practitioners have commonly employed in this disease both emetics and purgatives. When the appetite and digestion are considerably impaired, vomiting, if neither violent, nor frequently repeated, seems to be of service; and by a moderate agitation of the abdominal

viscera, may in some measure obviate the stagnation and consequent swelling that usually occur in them.

As the tumid state of the abdomen, so constantly to be met with in this disease, seems to depend very much upon a tympanitic affection of the intestines ; so, both by obviating this, and by deriving from the abdominal viscera, frequent gentle purgatives may be of service. Zeviani, perhaps properly, recommends in particular rhubarb ; which besides its purgative quality, has those also of bitter and astringent.

MDCXXXVI. I have now mentioned most of the remedies commonly employed by the practitioners of former times ; but I must not omit mentioning some others that have been lately suggested. The late Mr. De Haen recommends the testacea ; and assures us of their having been employed with success : but in the few trials which I have had occasion to make, their good effects did not appear.

The late Baron Van Swieten gives us one instance of rickets cured by the use of hemlock ; but I do not know that the practice has been repeated.



BOOK III.

OF THE IMPETIGINES;

, OR

DEPRAVED HABIT, WITH AFFECTIONS OF THE SKIN.

INTRODUCTION.

MDCCXXXVII. I FIND it difficult to give any sufficiently correct and proper character of this order. The diseases comprehended under it, depend, for the most part, upon a depraved state of the whole of the fluids, producing tumors, eruptions, or other preternatural affections of the skin. Although it be extremely difficult to find a general character of the order that will apply to each of the genera and species, I shall here treat of the principal genera which have been commonly comprehended under this order, and which I have enumerated in my Nosology.

C H A P. I.

OF SCROPHULA*, OR THE KING'S EVIL.

MDCCXXXVIII. THE character of this disease I have attempted in my Nosology; but it will be more properly taken from the whole of its history, now to be delivered.

* Swellings of the conglobate glands, chiefly in the neck: the upper lip and columna nasi are tumid; the face is of a florid complexion; the skin soft, and the belly swelled. *Syn. Nof.*

MDCCXXXIX. It is commonly, and very generally, a hereditary disease ; and although it sometimes may, yet it rarely appears, but in children whose parents had at some period of their lives been affected with it. Whether it may not fail to appear in the children of scrophulous parents, and discover itself afterwards in their offspring in the succeeding generation, I cannot certainly determine ; but believe that this has frequently happened. It appears to me to be derived more commonly from fathers than from mothers ; but whether this happens from their being more scrophulous men than scrophulous women married, I am not certain.

With respect to the influence of parents in producing this disease, it deserves to be remarked, that in a family of many children, when one of the parents has been affected with scrophula, and the other not ; as it is usual for some of the children to be in constitution pretty exactly like the one parent, and others of them like the other ; it commonly happens that those children who most resemble the scrophulous parent become affected with scrophula, while those resembling the other parent entirely escape.

MDCCXL. The scrophula generally appears at a particular period of life. It seldom appears in the first, or even in the second year of a child's life ; and most commonly it occurs from the second, or, as some allege, and perhaps more properly, from the third, to the seventh year. Frequently, however, it discovers itself at a later period ; and there are instances of its first appearance, at every period till the age of puberty ; after which, however, the first appearance of it is very rare.

MDCCXLI. When it does not occur very early, we can generally distinguish the habit of body peculiarly disposed to it. It most commonly affects children of soft and flaccid habits, of fair hair and blue eyes ; or at least affects those much more frequently than those of an opposite complexion. It affects especially children of smooth skins and rosy cheeks ; and such children have frequently a tumid upper lip, with a chop in the middle of it ; and this tumor is often considerable, and extended to the

columna nasi and lower part of the nostrils. The disease is sometimes joined with, or follows rickets; and although it frequently appears in children who have not had rickets in any great degree, yet it often attacks those who by a protuberant forehead, by tumid joints, and a tumid abdomen, show that they had some rachitic disposition. In parents who, without having had the disease themselves, seem to produce scrophulous children, we can commonly perceive much of the same habit and constitution that has been just now described.

Some authors have supposed that the small pox has a tendency to produce this disease; and Mr. De Haen asserts its following the inoculated more frequently than the natural small pox. This last position, however, we can confidently affirm to be a mistake; although it must be allowed, that in fact the scrophula does often come on immediately after the small pox. It is, however, difficult to find any connection between the two diseases. According to my observation, the accident only happens in children who have pretty manifestly the scrophulous disposition; and I have had several instances of the natural small pox coming upon children affected at the same time with scrophula, not only without this disease being any ways aggravated by the small pox, but even of its being for some time after much relieved.

MDCXLII. The scrophula generally shows itself first at a particular season of the year; and at some time between the winter and summer solstice; but commonly long before the latter period. It is to be observed further, that the course of the disease is usually connected with the course of the seasons. Whilst the tumors and ulcerations peculiar to this disease, appear first in the spring, the ulcers are frequently healed up in the course of the succeeding summer, and do not break out again till the ensuing spring, to follow again with the season the same course as before.

MDCXLIII. Frequently the first appearance of the disease is the tumid and chopped lip above mentioned. Upon other occasions the first appearance is that of small spherical or oval tumors, moveable under the skin. They

are soft, but with some elasticity. They are without pain ; and without any change in the color of the skin. In this state they often continue for a long time; even for a year or two, and sometimes longer. Most commonly they first appear upon the sides of the neck below the ears; but sometimes also under the chin. In either case, they are supposed to affect in these places the conglobate or lymphatic glands only ; and not at all the salivary glands, till the disease is very greatly advanced. The disease frequently affects, and even at first appears in other parts of the body. In particular, it affects the joints of the elbows and ankles, or those of the fingers and toes. The appearances about the joints are not commonly, as elsewhere, small, moveable swellings ; but a tumor almost uniformly surrounding the joint, and interrupting its motion.

MDCXLIV. These tumors, as I have said, remain for some time little changed ; and, from the time they first appeared in the spring, they often continue in this way till the return of the same season in the next, or perhaps the second year after. About that time, however, or perhaps in the course of the season in which they first appear, the tumor becomes larger and more fixed ; the skin upon it acquires a purple, seldom a clear redness : but growing redder by degrees, the tumor becomes softer, and allows the fluctuation of a liquid within to be perceived. All this process, however, takes place with very little pain attending it. At length some part of the skin becomes paler ; and by one or more small apertures a liquid is poured out.

MDCXLV. The matter poured out has at first the appearance of pus, but it is usually of a thinner kind than that from phlegmonic abscesses ; and the matter as it continues to be discharged, becomes daily less purulent, and appears more and more a viscid serum, intermixed with small pieces of a white substance resembling the curd of milk. By degrees the tumor almost entirely subsides, while the ulcer opens more, and spreads broader ; unequally, however, in different directions, and therefore is without any regular circumscription. The edges of the ulcer are commonly flat and smooth, both on their

but side and their inner edge, which seldom puts on a callous appearance. The ulcers, however, do not generally spread much, or become deeper ; but at the same time their edges do not advance, or put on any appearance of forming a cicatrix.

MDCCXLVI. In this condition the ulcers often continue for a long time ; while new tumors, with ulcers succeeding them in the manner above described, make their appearance in different parts of the body. Of the first ulcers, however, some heal up, while other tumors and ulcers appear in their vicinity, or in other parts of the body : and in this manner the disease proceeds, some of the ulcers healing up, at least to a certain degree, in the course of summer, and breaking out again in the succeeding spring : or it continues, by new tumors and ulcers succeeding them, in the spring season, making their appearance successively for several years.

MDCCXLVII. In this way the disease goes on for several years ; but very commonly in four or five years it is spontaneously cured, the former ulcers being healed up, and no new tumors appearing : and thus at length the disease ceases entirely, leaving only some indelible eschars, pale and smooth, but in some parts shrivelled ; or, where it had occupied the joints, leaving the motion of these impaired, or entirely destroyed.

MCCXLVIII. Such is the most favorable course of this disease ; and with us it is more frequently such than otherwise : but it is often a more violent, and sometimes a fatal malady. In these cases, more parts of the body are at the same time affected ; the ulcers also seeming to be imbued with a peculiar sharp acrimony, and therefore becoming more deep, eroding, spreading as well as seldom healing up. In such cases, the eyes are often particularly affected. The edges of the eyelids are affected with tumor and superficial ulcerations ; and these commonly excite obstinate inflammation in the adnata, which frequently produces an opacity of the cornea.

When the scrophula especially affects the joints, it sometimes produces there considerable tumors ; in the abscesses following which, the ligaments and cartileges are erod-

ed, and the adjoining bones are affected with a caries of a peculiar kind. In these cases, also, of more violent scropula, while every year produces a number of new tumors and ulcers, their acrimony seems at length to taint the whole fluids of the body, occasioning various disorders; and particularly a hectic fever, with all its symptoms, which at length proves fatal, with some times the symptoms of a phthisis pulmonalis.

MDCXLIX. The bodies of persons who have died of this disease show many of the viscera in a very morbid state; and particularly most of the glands of the mesentery very much tumefied, and frequently in an ulcerated state. Commonly also a great number of tubercles or cysts, containing matter of various kinds, appear in the lungs.

MDCCL. Such is the history of the disease: and from thence it may appear, that the nature of it is not easily to be ascertained. It seems to be a peculiar affection of the lymphatic system; and this in some measure accounts for its connection with a particular period of life. Probably, however, there is a peculiar acrimony of the fluids that is the proximate cause of the disease; although of what nature this is, has not yet been discovered. It may perhaps be generally diffused in the system, and exhaled into the several cavities and cellular texture of the body; and therefore, being taken up by the absorbents, may discover itself especially in the lymphatic system. This, however, will hardly account for its being more confined to that system, than happens in the case of many other acrimonies which may be supposed to be as generally diffused. In short, its appearance in particular constitutions, and at a particular period of life, and even its being a hereditary disease, which so frequently depends upon the transmission of a peculiar constitution, are all of them circumstances which lead me to conclude, upon the whole, that this disease depends upon a *peculiar constitution of the lymphatic system.*

MDCCLI. It seems proper to observe here, that the scrophula does not appear to be a contagious disease; at least I have known many instances of sound children hav-

ing had frequent and close intercourse with scrophulous children without being infected with the disease. This certainly shows, that in this disease the peculiar acrimony of it is not exhaled from the surface of the body, but that it depends especially upon a peculiar constitution of the system.

MDCCLII. Several authors have supposed the scrophula to have been derived from the venereal disease; but upon no just grounds that I can perceive. In very many instances, there can hardly be any suspicion of the parents producing this disease having been imbued with syphilis, or with any syphilitic taint; and I have known several examples of parents conveying syphilis to their offspring, in whom, however, no scrophulous symptoms at any time afterwards appeared. Further, the symptoms of the two diseases are very different; and the difference of their natures appears particularly from hence, that while mercury commonly and readily cures the syphilis, it does no service in scrophula, and very often rather aggravates the disease.

MDCCLIII. For the cure of scrophula, we have not yet learned any practice that is certainly or even generally successful.

The remedy which seems to be the most successful, and which our practitioners especially trust to and employ, is the use of mineral waters; and indeed the washing out, by means of these, the lymphatic system, would seem to be a measure promising success: but in very many instances of the use of these waters, I have not been well satisfied that they had shortened the duration of the disease more than had often happened when no such remedy had been employed.

MDCCLIV. With regard to the choice of the mineral waters most fit for the purpose, I cannot with any confidence give an opinion. Almost all kinds of mineral waters, whether chalybeate, sulphureous, or saline, have been employed for the cure of scrophula, and seemingly with equal success and reputation: a circumstance which leads me to think, that if they are ever successful,

it is the elementary water that is the chief part of the remedy.

Of late, sea water has been especially recommended and employed ; but after numerous trials, I cannot yet discover its superior efficacy.

MDCCLV. The other remedies proposed by practical writers are very numerous ; but upon that very account, I apprehend they are little to be trusted ; and as I cannot perceive any just reason for expecting success from them, I have very seldom employed them.

Of late, the Peruvian bark has been much recommended ; and as in scrophulous persons there are generally some marks of laxity and flaccidity, this tonic may possibly be of service ; but in a great variety of trials, I have never seen it produce any immediate cure of the disease.

In several instances, the leaves of coltsfoot have appeared to me to be successful. I have used it frequently in a strong decoction, and even then with advantage ; but have found more benefit from the expressed juice, when the plant could be had in somewhat of a succulent state, soon after its first appearance in the spring.

MDCCLVI. I have also frequently employed the hemlock, and have sometimes found it useful in discussing obstinate swellings ; But in this it has also often disappointed me ; and I have not at any time observed that it disposed scrophulous ulcers to heal.

I cannot conclude the subject of internal medicines without remarking, that I have never found either mercury or antimony, in any shape, of use in this disease ; and when any degree of a feverish state had come on, the use of mercury proved manifestly hurtful.

MDCCLVII. In the progress of scrophula, several external medicines are requisite. Several applications have been used for discussing the tumors upon their first coming on ; but hitherto my own practice, in these respects, has been attended with very little success. The solution of saccharum saturni has seemed to be useful ; but it has more frequently failed : And I have had no better success with the spiritus Mindereri. Fomentations of every kind have been frequently found to do harm ; and poult-

tices seem only to hurry on a suppuration. I am doubtful if this last be ever practised with advantage ; for scrophulous tumors sometimes spontaneously disappear, but never after any degree of inflammation has come upon them ; and therefore poultices which commonly induce inflammation, prevent that dissolution of tumors, which might otherwise have happened.

Even when scrophulous tumors have advanced towards suppuration, I am unwilling to hasten the spontaneous opening, or to make it by the lancet, because I apprehend the scrophulous matter is liable to be rendered more acrid by communication with the air, and to become more eroding and spreading than when in its inclosed state.

MDCCLVIII. The management of scrophulous ulcers has, so far as I know, been as little successful as that of the tumors. Escharotic preparations, of either mercury or copper, have been sometimes useful in bringing on a proper suppuration, and thereby dispossessing the ulcer to heal ; but they have seldom succeeded, and more commonly they have caused the ulcer to spread more. The escharotic from which I have received most benefit is burnt alum ; and a portion of that mixed with a mild ointment, has been as useful an application as any I have tried. The application, however, that I have found most serviceable, and very universally admissible, is that of linen cloths wetted with cold water, and frequently changed when they are becoming dry, it being inconvenient to let them be glued to the sore. They are therefore to be changed frequently during the day ; and a cloth spread with a mild ointment or plaster may be applied for the night. In this practice I have sometimes employed sea water ; but generally it proved too irritating ; and neither that nor any mineral water has appeared to be of more service than common water.

MDCCLIX. To conclude what I have to offer upon the cure of scrophula, I must observe, that cold bathing seems to have been of more benefit than any other remedy that I have had occasion to see employed*.

* Of late the muriate of lime has been highly extolled as a remedy of scrophula, and numerous well authenticated cases of its superior efficacy

C H A P. II.

OF SYPHILIS*, OR THE VENEREAL DISEASE.

MDCCLX. AFTER practitioners have had so much experience in treating this disease, and after so many books have been published upon the subject, it does not seem necessary, or even proper, for me to attempt any full treatise concerning it ; and I shall therefore confine myself to such general remarks, as may serve to illustrate some parts of the pathology or of the practice.

MDCCLXI. It is sufficiently probable, that anciently, in certain parts of Asia, where the leprosy prevailed, and in Europe after that disease had been introduced into it, a disease of the genitals, resembling that which now commonly arises from syphilis, had frequently appeared : but it is equally probable, that a new disease, and what we at present term *Syphilis*, was first brought into Europe about the end of the fifteenth century ; and that the disorder now so frequently occurring, has been very entirely derived from that which was imported from America at the period mentioned.

MDCCLXII. This disease, at least in its principal circumstances, never arises in any person but from some communication with a person already affected with it.

have been recorded. A drachm diluted with water is considered the medium dose for an adult in the day. The following case is selected from those related by Dr. Beddoes :

A boy, of eleven years, with a very scrophulous aspect, was brought to me : I found his submaxillary glands enlarged. The muscular irritability, under a florid appearance, was excessive. He could not lift a weight at arms length, which, in a healthy boy of eight years, did not require an effort. On placing him upon his hands and knees, and then laying a load of twenty pounds, he complained of pain.

A two months course of muriate of lime, to which, as in other cases, a few drops of muriatic acid were added, to make it palatable, effected a reduction of the swollen glands, rendered his flesh firm, and enabled him to support infinitely more exertion without fatigue. He could now bear seventy pounds upon his loins without any inconvenience ; and I did not wish to load him to the extent of his ability.'

* Contagious disease ; ulcers of the tonsils appear after impure connection, and disease of the genitals ; clustered pimples on the skin, especially at the margin of the hair, ending in crusts or scabby ulcers ; pains of the bones, with hard tumors. *Syn. Nys.*

It is most commonly contracted in consequence of coition with an infected person ; but in what manner the infection is communicated, is not clearly explained. I am persuaded, that in coition, it is communicated without there being any open ulcer either in the person communicating, or in the person receiving the infection ; but in all other cases, I believe it is never communicated in any other way than by a contact of ulcer, either in the person communicating or in the person receiving the infection.

MDCCLXIII. As it thus arises from the contact of particular parts, so it always appears first in the neighborhood of the parts, to which the infecting matter had been immediately applied ; and therefore, as most commonly contracted by coition, it generally appears first in the genitals.

MDCCLXIV. After its first appearance in particular parts, more especially when these are the genitals of either sex, its effects for some time seem to be confined to these parts ; and indeed in many cases never extends further. In other cases, however, the infecting matter passes from the parts first affected, and from the genitals therefore into the blood vessels ; and being there diffused, produces disorders in many other parts of the body.

From this view of the circumstances, physicians have very properly distinguished the different states of the disease, according as they are local or are more universal. To the former, they have adapted appellations suited to the manner in which the disease appears ; and to the other, the general affection, they have almost totally confined the appellations of *Syphilis*, *Lues Venerea*, or *Pox*. In the remarks I am now to offer, I shall begin with considering the local affection.

MDCCLXV. This local affection appears chiefly in the form of gonorrhœa or chancre.

The phenomena of gonorrhœa either upon its first coming on or in its after progress, or the symptoms of ardor urinæ, chordee, or others attending it, it is not necessary for me to describe. I shall only here observe, that the chief circumstance to be taken notice of, is the

inflamed state of the urethra, which I take to be inseparable from the disease.

MDCCLXVI. In these well known circumstances, the gonorrhœa continues for a time longer or shorter, according to the constitution of the patient ; it usually remaining longest in the most vigorous and robust, or according to the patient's regimen, and the care taken to relieve or cure the disease. In many cases, if by a proper regimen the irritation of the inflamed state is carefully avoided, the gonorrhœa spontaneously ceases, the symptoms of inflammation gradually abating, the matter discharged becoming of a thicker and more viscid consistence, as well as of a whiter color ; till at length, the flow of it ceases altogether ; and whether it be thus cured spontaneously, or by art, the disease often exists without communicating any infection to the other parts of the body.

MDCCLXVII. In other cases, however, the disease having been neglected, or by an improper regimen aggravated, it continues with all its symptoms for a long time ; and produces various other disorders in the genital parts, which, as commonly taken notice of by authors, need not be described here. I shall only observe, that the inflammation of the urethra, which at first seems to be seated chiefly, or only, in its anterior parts, is in such neglected and aggravated cases spread upwards along the urethra, even to the neck of the bladder. In these circumstances, a more considerable inflammation is occasioned in certain parts of the urethra : and consequently, suppuration and ulcer are produced, by which the venereal poison is sometimes communicated to the system, and gives rise to a general syphilis.

MDCCLXVIII. It was some time ago a pretty general supposition, that the gonorrhœa depended always upon ulcers of the urethra producing a discharge of purulent matter ; and such ulcers do indeed sometimes occur in the manner that has been just now mentioned. We are now assured, however, from many dissections of persons who had died when laboring under a gonorrhœa, that the disease may exist, and from many considerations it is probable that it commonly does exist, without any ulceration of

the urethra ; so that the discharge which appears, is entirely that of a vitiated mucus from the mucous follicles of the urethra.

MDCCLXIX. Although most of the symptoms of gonorrhœa should be removed, yet it often happens that a mucous fluid continues to be discharged from the urethra for a long time after ; and sometimes for a great part of a person's life. This discharge is what is commonly called a *Gleet*.

With respect to this, it is proper to observe, that in some cases, when it is certain that the matter discharged contains no venereal poison, the matter may, and often does put on that puriform appearance, and that yellow and greenish color, which appears in the discharge at the beginning and during the course of a virulent gonorrhœa. These appearances in the matter of a gleet, which before had been of a less colored kind, have frequently given occasion to suppose that a fresh infection had been received ; but I am certain that such appearances may be brought on by perhaps various other causes ; and particularly, by intemperance in venery and drinking concurring together. I believe, indeed, that this seldom happens to any but those who had before frequently labored under a virulent gonorrhœa, and have more or less of gleet remaining with them : but I must also observe, that in persons who at no period of their life had ever labored under a virulent gonorrhœa, or any other symptom of siphilitic affection, I have met with instances of discharges from the urethra resembling those of a virulent gonorrhœa.

The purpose of these observations is, to suggest to practitioners what I have not found them always aware of, that in persons laboring under a gleet such a return of the appearances of a virulent gonorrhœa may happen without any new infection having been received, and consequently not requiring the treatment which a new infection might perhaps demand. When in the cure of gonorrhœa it was the practice to employ purgatives very frequently, and sometimes those of the drafic kind, I have known the gleet, or spurious gonorrhœa, by such a practice much increased, and long continued, and the

patient's constitution very much hurt. Nay, in order more certainly further to prevent mistakes, it is to be observed, that the spurious gonorrhœa is sometimes attended with heat of urine, and some degree of inflammation ; but these symptoms are seldom considerable, and, merely by the assistance of a cool regimen, commonly disappear in a few days.

MDCCLXX. With respect to the cure of a virulent gonorrhœa, I have only to remark, that if it be true, as I have mentioned above, that the disease will often, under a proper regimen, be spontaneously cured ; and that the whole of the virulent matter may be thus entirely discharged without the assistance of art ; it would seem that there is nothing required of practitioners, but, to moderate and remove that inflammation which continues the disease, and occasions all the troublesome symptoms that ever attend it. The sole business therefore of our art in the cure of gonorrhœa, is to take off the inflammation accompanying it : and this I think may commonly be done, by avoiding exercise, by using a low and cool diet, by abstaining entirely from fermented and spiritous liquors, and by taking plentifully of mild diluent drinks.

MDCCLXXI. The heat of urine, which is so troublesome in this disease, as it arises from the increased sensibility of the urethra in its inflamed state ; so, on the other hand, the irritation of the urine has the effect of increasing the inflammation, and is therefore to be removed as soon as possible. This can be done most effectually by taking in a large quantity of mild watery liquors. Deinulcents may be employed ; but unless they be accompanied with a large quantity of water, they will have little effect. Nitre has been commonly employed as a supposed refrigerant ; but, from much observation, I am convinced, that in a small quantity it is useless, and in a large quantity certainly hurtful ; and, for this reason, that every saline matter passing with the urine generally gives some irritation to the urethra. To prevent the irritation of the urethra arising from its increased sensibility, the injection of mucilage or of mild oil into

it has been practised ; but I have seldom found this of much service.

MDCCLXXII. In gonorrhœa, as costiveness may be hurtful, both by an irritation of the system in general, and of the urethra in particular, as this is occasioned always by the voiding of hardened faeces ; so costiveness is to be carefully avoided or removed ; and the frequent use of large glysters of water and oil, I have found of remarkable benefit in this disease. If glysters, however, do not entirely obviate costiveness, it will be necessary to give laxatives by the mouth ; which, however, should be of the mildest kind, and should do no more than keep the belly regular and a little loose, without much purging.

The practice of frequent purging, which was formerly so much in use, and is not yet entirely laid aside, has always appeared to me to be generally superfluous, and often very hurtful. Even what are supposed to be cooling purgatives, such as Glauber's salt, soluble tartar, and crystals of tartar, in so far as any part of them pass by urine, they, in the same manner as we have said of nitre, may be hurtful ; and so far as they produce very liquid stools the matter of which is generally acrid, they irritate the rectum, and consequently the urethra. This last effect, however, the acrid, and in any degree drastic purgatives, more certainly produce.

MDCCLXXIII. In cases of gonorrhœa attended with violent inflammation, blood letting may be of service ; and in the case of persons of a robust and vigorous habit in whom the disease is commonly the most violent, blood letting may be very properly employed. As general bleedings, however, when there is no phlogistic diathesis in the system, have little effect in removing topical inflammation ; so in gonorrhœa, when the inflammation is considerable, topical bleeding applied to the urethra by leeches, is generally more effectual in relieving the inflammation.

MDCCLXXIV. When there is any phymosis attending a gonorrhœa, emollient fomentations applied to the whole penis are often of service. In such cases it is nec-

essary, and in all others useful, to keep the penis laid up to the belly, when the patient either walks about or is sitting.

MDCCLXXV. Upon occasion of frequent priapism and chordee, it has been found useful to apply to the whole of the penis a poultice of crumb of bread moistened with a strong solution of sugar of lead. I have, however, been often disappointed in this practice, perhaps by the poultice keeping the penis too warm, and thereby exciting the very symptoms I wished to prevent. Whether lotions of the external urethra, with a solution of the sugar of lead, might be useful in this case, I have not properly tried.

MDCCLXXVI. With respect to the use of injections, so frequently employed in gonorrhœa, I am persuaded, that the early use of astringent injections is pernicious ; not by occasioning a siphylis, as has been commonly imagined ; but by increasing and giving occasion to all the consequences of the inflammation, particularly to the very troublesome symptom of swelled testicles. When, however, the disease has continued for some time, and the inflammatory symptoms have very much abated, I am of opinion, that by injections of moderate astringency, or at least of this gradually increased, an end may be sooner put to the disease than would otherwise have happened ; and that a gleet, so readily occurring, may be generally prevented.

MDCCLXXVII. Besides the use of astringent injections, it has been common enough to employ those of a mercurial kind. With respect to these, although I am convinced that the infection producing gonorrhœa, and that producing chancres and siphylis, are one and the same ; yet I apprehend, that in gonorrhœa mercury cannot be of use by correcting the virulence of the infection ; and therefore that it is not universally necessary in this disease. I am persuaded, however, that mercury applied to the internal surface of the urethra, may be of use in promoting the more full and free discharge of virulent matter from the mucous glands of it. Upon this supposition, I have frequently employed mercurial injections ; and, as I judge, with advantage ; those injections often

bringing on such a state of the consistence and color of the matter discharged, as we know usually to precede its spontaneous ceasing. I avoid these injections, however, in recent cases, or while much inflammation is still present; but when that inflammation has somewhat abated, and the discharge notwithstanding still continues in a virulent form, I employ mercurial injections freely. I employ those only that contain mercury entirely in a liquid form, and avoid those which may deposit an acrid powder in the urethra. That which I have found most useful is a solution of the corrosive sublimate in water; so much diluted as not to occasion any violent smarting, but not so much diluted as to give no smarting at all. It is scarce necessary to add, that when there is reason to suspect there are ulcerations already formed in the urethra, mercurial injections are not only proper, but the only effectual remedy that can be employed.

MDCCLXXVIII. With regard to the cure of gonorrhœa, I have only one other remark to offer. As most of the symptoms arise from the irritation of a stimulus applied, the effects of this irritation may be often lessened by diminishing the irritability of the system; and it is well known, that the most certain means of accomplishing this is by employing opium. For that reason I consider the practice both of applying opium directly to the urethra, and of exhibiting it by the mouth, to be extremely useful in most cases of gonorrhœa.

MDCCLXXIX. After thus offering some remarks with respect to gonorrhœa in general, I might proceed to consider particularly the various symptoms which so frequently attend it; but it does not seem necessary for me to attempt this after the late publications Dr. Foart Simmons, and of Dr. Schwediauer, who have treated the subject so fully, and with so much discernment and skill.

MDCCLXXX. The other form of the local affection of syphilis, is that of chancre. The ordinary appearance of this I need not describe, it having been already so often done. Of the few remarks I have to offer, the first is, that I believe chancres never appear in any degree without immediately communicating to the blood more or

less of the venereal poison ; for I have constantly, whenever chancres had appeared, found, that unless mercury was immediately given internally, some symptoms of a general siphylis did certainly come on afterwards ; and though the internal use of mercury should prevent any such appearance, it is still to be presumed that the poison had been communicated, because mercury could act upon it in no other manner than as diffused in the fluids.

MDCCLXXXI. It has been a question among practitioners, upon the subject of chancres, Whether they may be immediately healed up by applications made to the chancres, or if they should be left open for some time without any such application ? It has been supposed, that the sudden healing up of chancres might immediately force into the blood a poison, which might have been excluded by being discharged from the chancre. This, however, is a supposition that is very doubtful ; and, upon the other had, I am certain, that the longer a chancre is kept open, the more poison it perhaps generates, and certainly supplies it more copiously to the blood. And although the above mentioned supposition were true, it will be of little consequence, if the internal use of mercury, which I judge necessary in every case of chancre, be immediately employed. I have often seen very troublesome consequences follow from allowing chancres to remain unhealed ; and the symptoms of general siphylis have always seemed to me to be more considerable and violent in proportion as chancres had been suffered to remain longer unhealed. They should always, therefore be healed as soon as possible ; and that by the only very effectual means, the application of mercurials to the chancre itself. Those that are recent, and have not yet formed any considerable ulcer, may often be healed by the common mercurial ointment ; but the most powerful means of healing them, has appeared to me to be the application of red precipitate in a dry powder.

MDCCLXXXII. When, in consequence of chancres, or of the other circumstances above mentioned, by which it may happen ; the venereal poison has been communicated to the blood, it produces many different symptoms in

different parts of the body, not necessary to be enumerated and described here, that having been already done by many authors with great accuracy.

MDCCLXXXIII. Whenever any of those symptoms do in any degree appear, or as soon as it is known that the circumstances which give occasion to the communication of the venereal poison have taken place, I hold the internal use of mercury to be immediately necessary ; and I am well persuaded, that mercury employed without delay, and in sufficient quantity, will pretty certainly prevent the symptoms which would otherwise have soon appeared, or will remove those that may have already discovered themselves. In both cases, it will secure the person from any future consequences of siphylis from that infection.

MDCCLXXXIV. This advice for the early and full use of mercury, I take to be the most important that can be given with respect to the venereal disease : And although I must admit that the virulence of the poison, may be greater in one case than in another ; and even that one constitution may be more favorable than another, to the violence of the disease ; yet I am thoroughly convinced, that most of the instances which have occurred of the violence and obstinacy of siphylis, have been owing very entirely to the neglect of the early application of mercury.

MDCCLXXXV. Whatever other remedies of siphylis may be known, or may hereafter be found out, I cannot pretend to determine ; but I am well persuaded, that in most cases mercury properly employed will prove a very certain and effectual remedy. With respect to others that have been proposed, I shall offer this remark only, that I have found the decoction of the mezereon contribute to the healing of ulcers which seemed to have resisted the power of mercury.

MDCCLXXXVI. With regard to the many and various preparations of mercury, I do not think it necessary to give any enumeration of them here, as they are commonly very well known, and have been lately well enumerated by Dr. Schwedauer. The choice of them

seems to be for the most part a matter of indifference ; as I believe cures have been, and still may be effected by many different preparations, if properly administered. The proper administration seems to consist, 1st, In the choosing those preparations which are the least ready to run off by stool ; and therefore the applications externally by unctio[n], are in many cases the most convenient. 2^{dly}, In employing the unction, or in giving a preparation of mercury internally, in such quantity as may shew its sensible effects in the mouth. And, 3^{dly}, Without carrying these effects to a greater length, in the continuing the employment of mercury for several weeks, or till the symptoms of the disease shall have for some time entirely disappeared. I say nothing of the regimen proper and necessary for patients during the employment of mercury, because I presume it to be very well known.

MCCCLXXXVII. Amongst the other preparations of mercury, I believe the corrosive sublimate has often been employed with advantage ; but I believe also, that it requires being continued for a longer time than is necessary in the employment of other preparations in the manner above proposed ; and I suspect it has often failed in making a cure, because employed while persons were at the same time exposed to the free air.

MDCCLXXXVIII. Upon these points, and others relative to the administration of mercury, and the cure of this disease, I might offer some particular remarks ; but I believe they are generally understood ; and it is enough for me to say here, that if practitioners will attend, and patients will submit to the general rules given above, they will seldom fail of obtaining a certain and speedy cure of the disease*.

* The nitrous acid has of late been powerfully recommended in the venereal disease : Numerous well authenticated cases have been adduced by men of high professional character, where it appears to have effected a cure in the most formidable stages of this distemper ; and a general spirit of inquiry has been excited to ascertain its real merits. It is, however, to be regretted, that our present experience does not enable us to establish its character as a substitute for mercury. That it possesses strong antisiphilitic powers is undoubted, but it is extremely doubtful whether it affords equal security with that remedy. Indeed the contradictory experience of physicians, equally distinguished and equally unbiased, while it represses too sanguine expectation, calls upon us to pause until time has settled the rank which it ought to

C H A P. III.

OF SCURVY*.

MDCCLXXXIX. THIS disease appears so frequently, and the effects of it are so often fatal in fleets and armies, that it has very properly engaged the particular attention of physicians. It is indeed surprising, that it had not sooner attracted the especial notice both of statesmen and physicians, so as to have produced those measures and regulations that might prevent the havoc which it so

hold amongst the remedies of the lues venerea. The nitrous acid has succeeded in many very unpromising cases, but in others, apparently slight, it has failed. Nor have those peculiar circumstances of constitution or disease, which indicate the propriety of its exhibition, been as yet pointed out.

It must however be allowed, that the nitrous acid is a highly valuable acquisition to our list of syphilitic remedies. It is not attended with any of those disagreeable consequences which so frequently follow the use of mercury : but on the contrary, seems to increase the appetite and improve the general health of the patient. Dr. Beddoes (to whose exertions on this subject the public are much indebted) observes, "that where the constitution is broken, the habit feeble or scrophulous, the cure should always be attempted by the nitrous acid, in preference to any other medicine." It likewise seems in many cases to be conjoined with mercury with great advantage, and in this way cures have been effected, after each had been tried separately in vain ; and it is observed, that when combined in this manner, patients both require less mercury, and bear the necessary quantity of it much better, than when it is exhibited alone. Dr. Rutherford remarks in his letter to Dr. Beddoes, that he has "seen an instance or two where the disease was so inveterate, and the constitution so broken, that neither the acid nor mercury were adequate to check the progress of the disease, as trial had been made of both in succession, but without any conspicuous advantage ; in these therefore, nitrous acid has been used at the same time with the mercury, and the two together have produced a most favorable change in almost every symptom." This is likewise corroborated by Mr. Blair, whose experience has been rather unfavorable to the acid ; but although he does not admit that it can be depended on for a radical cure of the secondary symptoms of lues, he esteems it extremely useful in conjunction or alternated with mercury.

The administration of this medicine is perfectly simple. A drachm of nitrous acid is added to a pint of water, and three or four ounces of simple syrup ; we begin with this quantity as a dose for the day, but it may be gradually increased to two and a half or three drachms.

Those who wish more minute information on this interesting subject, may consult the different Reports of Dr. Beddoes on the Nitrous Acid, Mr. Blair's Essays on the Venereal Disease, and Mr. Pearson on the same distemper.

* Extreme debility, bleeding of the gums, various colored spots upon the skin, more particularly livid, and chiefly at the roots of the hair ; these symptoms generally supervene in cold climates after a continued animal diet, consisting chiefly of putrid salted meat, and when there is a deficiency of fresh vegetables. *Syn. Nos.*

often occasions. Within these last fifty years, however, it has been so much attended to and studied, that we might suppose every circumstance relating to it so fully and exactly ascertained, as to render all further labor upon the subject superfluous. This perhaps may be true; but it appears to me, that there are still several circumstances regarding the disease not agreed upon among physicians, as well as different opinions formed, some of which may have a bad effect upon the practice: And this seems to me to be so much the case, that I hope I shall be excused in endeavoring here to state the facts as they appear to me from the best authorities, and to offer remarks upon opinions which may influence the practice in the prevention and cure of this disease.

MDCCXC. With respect to the phenomena of the disease, they have now been so fully observed, and so accurately described, that there is no longer any doubt in discerning the disease when it is present, or in distinguishing it from almost every other ailment. In particular it seems now to be fully determined, that there is one disease only entitled to the appellation of Scurvy; that it is the same upon the land as upon the sea; that it is the same in all climates and seasons, as depending every where upon nearly the same causes; and that it is not at all diversified, either in its phenomena or its causes, as had been imagined some time ago.

MDCCXCI. The phenomena of scurvy, therefore, are not to be described here, as it has been so fully and accurately done elsewhere; and I shall only endeavor to ascertain those facts with respect to the prevention and cure of the disease which seem not yet to be exactly agreed upon. And, first, with respect to the antecedents that may be considered as the remote causes of the disease.

MDCCXCII. The most remarkable circumstance amongst the antecedents of this disease is, that it has most commonly happened to men living very much on salted meats; and whether it ever arise in any other circumstances, is extremely doubtful. These meats are often in a putrefactive state; and to the circumstance of the long continued

use of animal food in a putrescent and somewhat indigestible state, the disease has been especially attributed. Whether the circumstance of the meat's being salted, has any effect in producing the disease, otherwise than by being rendered more indigestible, is a question that remains still in dispute.

MDCCXCIII. It seems to me, that the salt concurs in producing the effect; for there is hardly any instance of the disease appearing unless where salted meats had been employed, and scarcely an example where the long continued use of these did not produce it: Besides all which, there are some instances where, by avoiding salted meats, or by diminishing the proportion of them in diet, while other circumstances remained much the same, the disease was prevented from appearing. Further, if it may be admitted as an argument upon this subject, I shall hereafter endeavor to show, that the large use of salt has a tendency to aggravate and increase the proximate cause of scurvy.

MDCCXCIV. It must, however, be allowed, that the principal circumstance in causing scurvy, is the living very much and very long upon animal food, especially when in a putrescent state; and the clear proof of this is, that a quantity of fresh vegetable food will always certainly prevent the disease.

MDCCXCV. While it has been held, that, in those circumstances in which scurvy is produced, the animal food employed was especially hurtful by its being of difficult digestion, this opinion has been attempted to be confirmed, by observing, that the rest of the food employed in the same circumstances was also of difficult digestion. This is supposed to be especially the case of unfermented farinacea which so commonly makes a part of the sea diet: but I apprehend this opinion to be very ill founded; for the unfermented farinacea, which are in a great proportion the food of infants, of women, and of the greater part of mankind, can hardly be supposed to be food of difficult digestion: and with respect to the production of scurvy, there are facts which show, that unfermented

farinacea, employed in large proportion, have had a considerable effect in preventing the disease.

M D C C X C V I . It has been imagined, that a certain impregnation of the air upon the sea had an effect in producing scurvy. But it is altogether improbable : for the only impregnations which could be suspected, are those of inflammable or mephitic air ; and it is now well known, that these impregnations are much less in the air upon the sea than in that upon the land ; besides, there are otherwise many proofs of the salubrity of the sea air. If, therefore, sea air have any effect in producing scurvy, it must be by its sensible qualities of cold or moisture.

M D C C X C V I I . That cold has an effect in favoring the production of scurvy, is manifest from hence, that the disease is more frequent and more considerable in cold than in warm climates and seasons ; and that even warm clothing has a considerable effect in preventing it.

M D C C X C V I I I . Moisture may in general have an effect in favoring the production of scurvy, where that of the atmosphere in which men are placed is very considerable : but the ordinary moisture of the sea air is far from being such. Probably it is never considerable, except in the case of unusual rains ; and even then, it is perhaps by the application of moisture to the bodies of men in damp clothing only that it has any share in the production of scurvy. At the same time, I believe there is no instance of either cold or moisture producing scurvy, without the concurrence of the faulty sea diet.

M D C C X C I X . Under those circumstances which produce scurvy, it commonly seems to occur most readily in the persons who are the least exercised ; and it is therefore probable, that confinement and want of exercise may have a great share in producing the disease.

M D C C C . It appears that weakness, in whatever manner occasioned, is favorable to the production of scurvy. It is therefore probable, that unusual labor and fatigue may often have some share in bringing it on : and upon the same account, it is probable, that sadness and despondency may induce a weakness of the circulation, and be there-

by, as has been remarked, favorable to the production of scurvy.

MDCCL. It has also been observed, that persons negligent in keeping their skin clean by washing and change of clothing, are more liable than others to be affected with scurvy.

MDCCLII. Several of these causes, now mentioned, concurring together, seem to produce scurvy ; but there is no proper evidence that any one of them alone will produce it, or that all the others uniting together will do it, without the particular concurrence of the sea diet. Alongst with this, however, several of the other circumstances mentioned, have a great effect in producing it sooner, and in a more considerable degree, than would otherwise have happened from the diet alone.

MDCCLIII. From this view of the remote causes, it will readily appear that the prevention of the disease may in some measure depend upon the avoiding of those circumstances which we have enumerated as contributing to bring on the disease sooner than it would otherwise come on. At the same time, the only effectual means will be, by avoiding the diet of salted meats ; at least by lessening the proportion of these, and using meat preserved otherwise than by salt ; by using in diet any kind of esculent vegetable matter that can be obtained ; and especially by using vegetable matters the most disposed to acescency, such as malt ; and by drinking a large quantity of pure water.

MDCCLIV. The cure of scurvy seems now to be very well ascertained ; and when the necessary means can be obtained, the disease is commonly removed very quickly. The chief means is a food of fresh and succulent vegetables, and those almost of any kind that are at all esculent. Those most immediately effectual are the acid fruits, and, as being of the same nature, all sort of fermented liquor.

MDCCLV. The plants named *alkalescent*, such as those of the garlic tribe and of the tetradymaniæ, are also particularly useful in the cure of this disease ; for, notwithstanding their appellation, they in the first part of their fermentation undergo an acescency, and seem to contain

a great deal of acescent matter. At the same time, they have generally in their composition an acrid matter that readily passes by urine, probably by perspiration ; and, by promoting both excretions, are useful in the disease. It is probable, that some plants of the coniferous tribe, such as the spruce fir, and others possessed of a diuretic power, may likewise be of some use.

M D C C C V I . It is sufficiently probable, that milk of every kind, and particularly its productions, whey and butter milk, may prove a cure of this disease.

M D C C C V I I . It has been common in this disease to employ the fossil acids ; but there is reason to doubt if they be of any service, and it is certain they are not effectual remedies. They can hardly be thrown in, in such quantity as to be useful antiseptics ; and as they do not seem to enter into the composition of the animal fluids, and probably pass off unchanged by the excretions, so they can do little in changing the state of the fluids.

M D C C C V I I I . The great debility which constantly attends scurvy, has naturally led physicians to employ tonic and strengthening medicines, particularly the Peruvian bark ; but the efficacy of it seems to me very doubtful. It is surprising how soon the use of a vegetable diet restores the strength of scorbutic persons ; which seem to show that the preceding debility had depended upon the state of the fluids ; and consequently till the sound state of these can be restored, no tonic remedy can have much effect : but as the Peruvian bark has little power in changing the state of the fluids, so it can have little effect in scurvy.

M D C C C I X . I shall conclude my observations upon the medicines employed in scurvy, with remarking, that the use of mercury is always manifestly hurtful.

M D E C C X . After having observed that both the prevention and cure of this disease are now very well known, it may seem unnecessary to enter into much discussion concerning its proximate cause : but as such discussions can hardly be avoided, and as false opinions may in some measure corrupt the practice, I shall venture to suggest here what appears to me most probable upon the subject.

MDCXXI. Notwithstanding what has been asserted by some eminent persons, I trust to the concurring testimony of the most part of the authors upon the subject, that in scurvy, the fluids, suffer a considerable change.

From these authors we learn, that in the blood drawn from the veins of persons laboring under the scurvy, the crassamentum is different both in color and consistence from what it is in healthy persons ; and that at the same time the serum is commonly changed both in color and taste. The excretions also, in scorbutic persons, show a change in the state of the fluids. The breath is fetid; the urine is always high colored, and more acrid than usual; and if that acrid exudation from the feet, which Dr. Hulme takes notice of, happens especially in scorbutic persons, it will be a remarkable proof to the same purpose. But however this may be, there is evidence enough that in scurvy the natural state of the fluids is considerably changed. Further, I apprehend it may be confidently presumed from this, that the disease is brought on by a particular nourishment introduced into the body, and is as certainly cured by the taking in of a different diet. In the latter case, the diet used has no other evident operation, than that of giving a particular state and condition to the fluids.

MDCXXII. Presuming, therefore, that the disease depends upon a particular condition of the fluids of the body, the next subject of inquiry is, what that condition may be ?

With this view, I must observe, that the animal economy has a singular power of changing acescent aliments, in such a manner as to render them much more disposed to putrefaction : and although, in a living state, they hardly ever proceed to an actually putrid state ; yet in man, whose aliment is of a mixed kind it is pretty certain, that if he were to live entirely upon animal food, without a frequent supply of vegetable aliment, his fluids would advance further towards putrefaction than is consistent with health. This advance towards putrefaction seems to consist in the production and evolution of a saline matter which did not appear in the vegetable aliment,

and could not be produced or evolved in it, but by carrying on its fermentation to a putrefactive state. That this saline state, is constantly in some measure produced and evolved by the animal process, appears from this, that certain excretions of saline matter are constantly made from the human body, and are therefore presumed necessary to its health.

From all this, it may be readily understood, how the continual use of animal food, especially when already in a putrescent state, without a mixture of vegetable, may have the effect of carrying the animal process too far, and particularly of producing and evolving a larger proportion of saline matter. That such a preternatural quantity of saline matter does exist in the blood of scorbutic persons, appears from the state of the fluids above mentioned. It will be a confirmation of all this to observe, that every interruption of perspiration, that is, the retention of saline matter, contributes to the production of scurvy ; and this interruption is especially owing to the application of cold, or to whatever else weakens the force of the circulation, such as the neglect or want of exercise, fatigue, and despondency of the mind. It deserves indeed to be remarked here, that one of the first effects of the scurvy once induced, is very soon to occasion a great debility of the system, which occasions of course a more rapid progress of the disease. How the state of the fluids may induce such debility is not well understood ; but that it does depend upon such a state of the fluids, is rendered sufficiently presumable from what has been said above with regard to both the causes and the cure of scurvy.

MDCCLXIII. It is possible, that this debility may have a great share in producing several of the phenomena of scurvy ; but a preternaturally saline, and consequently dissolved state of the blood, will account for them with more probability ; and I do not think it necessary to persons who are at all accustomed to reason upon the animal economy, to explain this matter more fully. I have only to add, that if my opinion in supposing the proximate cause of scurvy to be a preternaturally saline state of the blood be at all founded, it will be sufficiently

obvious, that the throwing into the body, along with the aliment, an unusual quantity of salt, may have a great share in producing the disease. Even supposing such salt to suffer no change in the animal body, the effect of it may be considerable ; and this will be rendered still more probable, if it may be presumed, that all neutral salts, consisting of a fixed alkali, are changed in the animal body into an ammoniacal salt ; which I apprehend to be that especially prevailing in scurvy. If I be at all right in concluding, that meats, from being salted contribute to the production of scurvy, it will readily appear, how dangerous it may be, to admit the conclusion from another theory, that they are perfectly innocent.

MDCCCXIV. Having thus endeavored to explain what relates to the cure of scurvy in general, I judge it proper to leave to other authors what relates to the management of those symptoms, which require a particular treatment.



C H A P. IV.

OF JAUNDICE*.

MDCCCXV. I HAVE here passed over several of the titles in my Nosology, because they are diseases not of this island. In these, therefore, I have no experience; and without that, the compiling from other writers is always extremely fallacious. For these reasons I omit them ; and shall now only offer some remarks upon the subject of jaundice, the last in order that I can possibly introduce into my course of Lectures.

MDCCCXVI. The jaundice consists in a yellow color of the skin over the whole body, and particularly of the adnata of the eyes. This yellow color may occur from different causes : but in the jaundice, hereafter to be more exactly characterised, I judge it to depend upon a

* A yellowness of the skin and eyes ; whiteness of the faeces, the urine slightly red, and tinging cloth immersed with a yellow color. *Syn.* *Nos.*

quantity of bile present in the mass of blood ; and which, thrown out upon the surface, gives its own proper color to the skin and eyes.

MDCCCXVII. That the disease depends upon this, we know particularly and certainly from the causes by which it is produced. In order to explain these, I must observe, that bile does not exist in its proper form in the mass of blood, and cannot appear in this form till it has passed the secretory organ of the liver. The bile therefore cannot appear in the mass of blood, or upon the surface of the body, that is, produce jaundice from any interruption of its secretion ; and accordingly, if jaundice does appear, it must be in consequence of the bile, after it had been secreted, being again taken into the blood vessels.

This may happen in two ways ; either by an interruption of its excretion, that is, of its passage into the duodenum, which by accumulating it in the biliary vessels, may give occasion to its passing again into the blood vessels ; or it may pass into these, by its being absorbed from the alimentary canal when it happens to be accumulated there in an unusual quantity. How far the latter cause can take place, or in what circumstances it does occur, I cannot clearly ascertain, and I apprehend that jaundice is seldom produced in that manner.

MDCCCXVIII. The former cause of stopped excretion may be understood more clearly ; and we have very certain proof of its being the ordinary, and indeed almost the universal cause of this disease. Upon this subject it will be obvious, that the interrupted excretion of the bile must depend upon an obstruction of the *ductus communis choledochus* ; the most common cause of which is a biliary concretion formed in the gall bladder, and from thence fallen down into the ductus communis, it being at the same time of such a size as not to pass readily through that duct into the duodenum. This duct may likewise be obstructed by a spasmodic constriction affecting it ; and such spasm may happen, either in the duct itself, which we suppose to be contractile ; or in the duodenum pressing the sides of the duct close together ; or lastly, the duct may be obstructed by a tumor compressing it, and

that arising either in the coats of the duct itself, or in any of the neighboring parts that are or may come to be contiguous to it.

MDCCCXIX. When such obstruction happens, the secreted bile must be accumulated in the biliary ducts ; and from thence it may either be absorbed and carried by the lymphatics into the blood vessels, or it may regurgitate in the ducts themselves, and pass from them directly into the ascending cava. In either way, it comes to be diffused in the mass of blood ; and from thence may pass by every exhalant vessel, and produce the disease in question.

MDCCCXX. I have thus shortly explained the ordinary production of jaundice : but it must be observed further, that it is at all times accompanied with certain other symptoms, such as a whiteness of the *fæces alvineæ*, which we readily account for from the absence of bile in the intestines ; and generally also, with a certain consistence of the fæces, the cause of which it is not so easy to explain. The disease is always accompanied also with urine of a yellow color, or at least with urine that tinges a linen cloth with a yellow color. These are constantly attending symptoms ; and though not always, yet there is commonly a pain felt in the epigastrium, corresponding, as we suppose, to the seat of the *ductus communis*. This pain is often accompanied with vomiting ; and even when the pain is not considerable, a vomiting sometimes occurs. In some cases, when the pain is considerable, the pulse becomes frequent, full, and hard, and some other symptoms of pyrexia appear.

MDCCCXXI. When the jaundice is occasioned by tumors of the neighboring parts compressing the biliary duct, I believe the disease can very seldom be cured. That such is the cause of jaundice, may with some probability be supposed, when it has come on in consequence of other diseases which had subsisted long before, and more especially such as had been attended with symptoms of obstructed viscera. Even when the jaundice has subsisted long without any intermission, and

without any pain in the epigastrium, an external compression is to be suspected.

MDCCCXXII. In such circumstances, I consider the disease as incurable ; and it is almost only when the disease is occasioned by biliary concretions obstructing the biliary duct, that we may commonly expect relief, and that our art may contribute to the obtaining it. Such cases may be generally known, by the disease frequently disappearing and returning again ; by our finding, after the former accident, biliary concretions amongst the fæces ; and by the disease being frequently accompanied with pain of the epigastrium, and with vomitings arising from such pain.

MDCCCXXIII. In these cases, we know of no certain and immediate means of expediting the passage of the biliary concretions. This is generally a work of time, depending upon the gradual dilatation of the biliary duct; and it is surprising to observe, from the size of the stones which sometimes pass through, what dilatation the duct will admit of. It proceeds, however, faster or slower upon different occasions ; and therefore the jaundice, after a various duration often ceases suddenly and spontaneously. It is this which has given rise to the belief, that the jaundice has been cured by such a number and such a variety of different remedies. Many of these however, are perfectly inert, and many others of them such as cannot be supposed to have any effect in expediting the passage of a biliary concretion. I shall here, therefore, take no notice of the numerous remedies of jaundice mentioned by the writers on the *Materia Medica*, or even of those to be found in practical authors ; but shall confine myself to the mention of those that may with probability be supposed to favor the passage of the concretion, or remove the obstacles to it which may occur.

MDCCCXXIV. In the treatment of this disease, it is, in the first place, to be attended to, that as the distension of the biliary duct, by a hard mass that does not easily pass through it, may excite inflammation there ; so in persons of tolerable vigor, blood letting may be an useful precaution ; and when much pain, together with any de-

gree of pyrexia, occurs, it becomes an absolutely necessary remedy. In some instances of jaundice accompanied with these symptoms, I have found the blood drawn covered with an inflammatory crust as thick as in cases of pneumonia.

MDCCXXV. There is no means of pushing forward a biliary concretion that is more probable than the action of vomiting; which, by compressing the whole abdominal viscera, and particularly the full and distended gall bladder and biliary vessels, may contribute, sometimes gently enough, to the dilatation of the biliary duct. Accordingly vomiting has often been found useful for this purpose: But at the same time it is possible, that the force exerted in the act of vomiting may be too violent, and therefore gentle vomits ought only to be employed. And either when, by the long continuance of the jaundice, it may be suspected that the size of the concretion then passing is large; or more especially when pain attending the disease gives apprehension of inflammation, it may be prudent to avoid vomiting altogether.

MDCCXXVI. It has been usual in the jaundice to employ purgatives: And it is possible that the action of the intestines may excite the action of the biliary ducts, and thus favor the expulsion of the biliary concretion: But this, I think, cannot be of much effect; and the attempting it by the frequent use of purgatives, may otherwise hurt the patient. For this reason, I apprehend that purgatives can never be proper, excepting when there is a slow and bound belly.

MDCCXXVII. As the relaxation of the skin contributes to relax the whole system, and particularly to relieve the constriction of subjacent parts; so, when the jaundice is attended with pain, fomentations of the epigastrium may be of service.

MDCCXXVIII. As the solids of the living body are very flexible and yielding; so it is probable, that biliary concretions would in many cases find the biliary duct readily admit of such dilatation as to render their passage through it easy, were it not that the distension occasions a preternatural spasmodic contraction of the parts below. Up-

on this account, opium is often of great benefit in jaundice ; and the benefit resulting from its use, proves sufficiently the truth of the theory upon which the using of it has been founded.

MDCCCXXIX. It were much to be wished that a solvent of biliary concretions, which might be applied to them in the gall bladder, or biliary ducts, was discovered : but none such, so far as I know, has yet been found ; and the employment of soap in this disease, I consider as a frivolous attempt. Dr. White of York has found a solvent of biliary concretions when these are out of the body ; but there is not the least probability, that it could reach them while lodged within.

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